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The effect of educational exercises by stimulating the brain with (Fit Light) technique on improving functional thinking and some kinematic manifestations and learning to perform running (400) meters

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Abstract

The research aimed to prepare educational exercises to perform a 400-meter run by stimulating the brain with the Fit Light technology for students, and to identify the effect of these educational exercises by stimulating the brain with the Fit Light technique in improving functional thinking and some kinematic aspects of learning to perform a 400-meter run for students. The experimental research method was adopted by designing the experimental and control groups with tight control for the pre- and post-tests. The boundaries of the research community were represented by third-year students in the Department of Physical Education and Sports Sciences at Al-Mustafa University continuing the official working hours for the academic year (2023-2024), a total number of (85) students who were chosen. Among them for the main research sample were (40) students, representing (47.059%) from this community. Then, the experimental research group was randomly selected: students from Class (B), and students from Class (A) as a control group. After determining the measurement tools, an experiment was conducted by distributing (3) devices of (Fit Light) technology that operate with (LED) daylight or nightlight, distributed in arcs at distances of (100), (200), and (200) meters from the running track for an event of (400) meters, as the students applied it in the practical side of the main section for a period of (60) minutes of this lesson, at a rate of (2) lessons per week, for a period of (3) consecutive weeks. As for the students in the control group, they applied the same educational exercises, but without stimulating the brain with technology. (Fit Light), and the experiment began by applying pre-tests on Sunday, corresponding to (11/5/2023), and then the application began for the period extending from Monday, corresponding to (11/6/2023) until Wednesday, corresponding to (11/22). /2023), and the experiment ended with the application of post-tests on Thursday, corresponding to (11/23/2023), and the results were processed with the Social Statistical System (SPSS) so that the conclusions were recommendations that educational exercises by stimulating the brain with (Fit Light) technology help in improving functional thinking, In improving some of the kinematic aspects of both motor transfer between parts of the body and motor flow in terms of change in momentum, and in

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improving learning to run (400) meters among third-year students in the Department of Physical Education and Sports Sciences, it is necessary to increase the capabilities of athletics teachers to enable them to apply educational exercises. By stimulating the brain with Fit Light technology because of its important role in motor learning for both the mental and skill factor.

Keywords: Fit Light technology, functional thinking, kinematic aspects, learning to run (400) meters

introduction:

Improvements in kinesiology depend on the practical practice of educational exercise applications that are comprehensive in terms of stimulating thinking and stimulating the senses, in a way that supports renewed motor learning, taking into account the availability of the suspense factor to ensure that learners continue in these exercises to perform distance running, especially running a distance of (400) meters, which by its nature requires... Among the learners are the motor coordination between the parts of the body in the repetitive movements of running, with minimal performance errors, which increases the nervous fatigue factor among the learners and thus confuses their thinking, which harms their performance in running this event.(Sakran & Shehab, 2023)

"In order to develop students 'levels of thinking, we must help them acquire thinking skills, as possessing these skills is an educational goal and a necessary educational requirement) ".Ahmed and Hakam, 2013, p. 565)

Also" ,in order to know how to deliver a message to the future in an understandable way, we must learn how to choose appropriate thinking methods, which is the key to our success in this. In addition, our knowledge of thinking methods is part of the skills we need) ".Saeed and Marwan, 2003, p. 30)

It is no secret that" every individual has his own way of thinking, and it is extremely difficult to predict the ways of thinking of others) ".Adnan, 2004, p. 79)

Also" ,in the functional thinking style, students tend to enjoy formulating and planning solutions, and this function includes innovation, formulation, planning ideas, and strategies. They also prefer to realize their own ways of doing things and decide for themselves what they will do and how they will do it, and they enjoy doing things in their own way) ".Saleh and Muhammad, 2007 ,p. 54)

In functional thinking, students prefer the executive method for specific tasks, and they adhere to the rules and laws. They are merely recipients of orders and carry out what is asked of them according to what is specified. They excel at solving problems, as the word "executive "refers to these mental functions involved in investigation and not in planning. And the executive function is more implementation than planning) ".Samia, 2005 ,p. 148)

Although the requirements for running (400) are physical to complete this distance, improving the motor performance of repetitive movements is one of the most important of these requirements as well, considering that the accompanying movements or common mistakes can lead to local fatigue and then mental fatigue that confuses. Thinking about performance, which then leads to harming the skill factor of this activity.(HalahAtiyah et al., 2024)

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"Superior skill performance cannot be performed in a distinctive manner unless it is subjected to research and analysis from multiple aspects in light of the laws and rules of biomechanics in preparation for achieving the best results) ".Muhammad, 2022, p. 12)

Also" ,in most movements, the limbs are relied upon as a source of driving force or as an auxiliary force, and motor transfer from the limbs to the torso appears clearly in most sports movements, and it can also be classified into motor transfer from the arms to the torso, motor transfer from the legs to the torso, and motor transfer ".From head to torso. (Barquq, 2014, p. 11)

In addition" ,the level of control moves from the spinal cord to the cerebral motor cortex, so the degree of movement complexity increases from simple control of simple reactions to complex movements) ".Hamid, 2014, p. 328)

To delve into the principle of comprehensiveness for the skill performance of running a distance of (400) metres, the kinematic aspects provide support as a diagnosis of the safety of performing movements, as" we can confirm that the main field of biomechanics is research into the rules, conditions, (Khedir, 2018) and technical origins of various motor skills in an objective manner, and there is no doubt that the study The objectivity of motor skill contributes to creating the foundations for the best and most appropriate possible skill performance, by expanding the base of theoretical information about the various types of sports activities in order to be able to innovate and achieve the best possible motor achievement) ".Muhammad, 2003, p. 15)

Also" ,motor performance in sports activities requires a high degree of motor coordination, meaning the ability to show appropriate motor actions in certain circumstances based on previous motor experiences or mastered skills, and in other words the athlete's ability to act motorically in the face of different circumstances during performance) ".Abu Al-Ala, 2012, p. 233)

"It is clear from Piaget's opinions and ideas that learning is an active and continuous process that leads to the learner creating new cognitive structures (cognitive systems) that achieve successful interaction with tangible environmental stimuli and benefit from the experiences the learner has acquired in new situations ".(Kawthar, 2007) , p. 114)

Also" ,the task of the nervous system is to stimulate the various vital systems in the body to continue doing its work, and in the case of continuous stimulation, the speed of the organism's motor activity increases) ".Ali and Ikhlas, 2005, pp. 79-80)

Representing the stimulus leads to arousing attention, and therefore innovation must be done to avoid boredom. The stimulus must be attention-grabbing, in terms of its nature and spatial location, and it must be changed to draw attention, in addition to the intensity and novelty of this stimulus, so that it has applied importance in many scientific fields. (Sami, 2017, pp. 200-201)

Also" ,attention directs awareness)awareness (Toward the stimuli in question so that they become accessible to the senses...which is the mutual relationship between the player and the environment, and attention is closely linked to thinking and observation) ".Osama, 2000, p. 271)

"Therefore, the learner's activity in the educational situation is considered a mental activity based on the interaction of the learner's mental powers with educational stimuli and experiences, and then understanding and perceiving the stimuli and phenomena and the relationships between them, and thus learning has been completed) ".Hindi, 2010, p. 42)

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After this digression on the connection between the comprehensiveness of educational exercises with both the mental factor and the tactical performance factor to continue performing repetitive movements for the (400) meter event, and by virtue of the researcher's work in the academic and training field for some athletics events, she noticed a decrease in the levels of technical skill performance for learning to run the (400) meter event. Especially in the stage of crossing the third arc and entering the fourth distance of this event, which necessitated the need to delve into activating the brain through sensory stimulation of sight through technical mediation. (Ahmed Muhammad AbdulkhaliqAlhasan, 2024)) Fit Light (As an attempt by the researcher to provide support and support for the desired results of this research for both students and teachers to reduce this apparent weakness by learning the skillful performance of this event, this research aims to prepare educational exercises for performing a 400-meter run by stimulating the brain using technology) .Fit Light (For students, and learn about the effect of these educational exercises by stimulating the brain using technology) Fit Light (In improving functional thinking and some kinematic aspects for learning to run (400) meters among students, and the researcher assumes that there are statistically significant differences between the results of the pre- and post-tests for the experimental and control research groups in improving functional thinking and some kinematic aspects for learning to run (400) meters, (Kadhim, 2023) and there are Statistically significant differences between the arithmetic averages of the results of the experimental and control research groups in improving functional thinking and some kinematic aspects for learning to run (400) metres.

Method and procedures:

The experimental research approach was adopted, which is defined as" controlling a specific variable within the conditions of an experiment that enjoys safety conditions to determine its effect on another variable or variables by fixing the rest of the influencing factors ".(Fawqia, 2022, p. 218) The experimental design was also adopted for the experimental and control groups with tight control in the pre- and post-tests, and the boundaries of the research community were represented by the third-year students in the Department of Physical Education and Sports Sciences at Al-Mustafa University who are continuing the official working hours for the academic year (2023-2024), the total number of which is (85) students, who are naturally divided into two study divisions: the division)A (The number of students is (40), and the division) B (The number of students is (45) students. From both divisions, (20) students were randomly selected for the main research sample, bringing the number of this sample to (40) students, representing (47.059%) from this population. Then, students from the division were randomly selected for the experimental research group) .B(And the students of the division) A (As a control for it, (10) students from both classes were chosen for the exploratory sample and to verify the scientific foundations and parameters of the functional thinking scale, bringing the number to (20) students, representing (23.529%) from their community of origin. To measure functional thinking, the global scale (Harmson) was adopted, which contains (18).) A paragraph with (5) alternatives, each with a weight score according to the graded (5-1) Likert scale correction, with a total score (18-90), and a hypothetical mean (54), to suit the privacy of third-year students in the Department of Physical Education and Sports Sciences, By adopting the steps of statistical treatments, the experts agreed by a percentage (%80) It was more applied as it is to verify the apparent validity, and it was also tested in a survey to

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complete its academic acceptance, by applying it to a statistical analysis sample of)20)Student, to verify reliability with the (Cronbach's Alpha) equation)0.849(At the level of significance)0.05(and degree of freedom18(To measure learning the skill performance of the (400) meter event, the students were photographed during the stage of crossing the third arc and entering the fourth distance of this event, by videotaping it with a high-speed camera type) Casio- Exilim Pro)Japanese origin at different speeds (300،600،1200(image. Again, for the specificity of the current research, I rely on videography)300) p. 2 number (3(with (3)A camera holder equipped with a water cap, and presented to three evaluators so that the results of each test were recorded in a unit of measurement of a score out of (10), distributed as follows: the preparatory section: its score is (3), the main section: its score is (5), and the final section: its score is (2), From this same imaging, measurements of momentum transfer between body parts and kinetic flow were taken using the kinetic analysis program) Dart fish–Team Pro 5_full version ,(in conjunction with the learner crossing the third arc distance of running (400) metres, and for testing on the students of the experimental group in the division) B (The researcher intended to distribute (3) Devices of technology) Fit Light (Which operates with lighting) LED (Day or night lighting is distributed in arcs at distances of (100), (200), and (300) meters from the running track for an event of (400) metres. Each of them is illuminated by the teacher, who stands in the middle of the track, at equal distances (10) before the student arrives. meters for each specific distance of the three arcs, by means of a (manual remote) that operates on a dry battery and is designated for these steps, the role of which is stimulating to the brain, as the student needs to pay attention, focus, and functional thinking to the technical performance of the repetitive movements of event running, and it was invested in the educational environment to accompany their exercises followed in their educational units in Each of the lessons followed in the section without the researcher's intervention in their content or educational methods and techniques when applying them in the practical part of the main section in the lesson, which has a total time of (90), as the students applied them in the applied part of the main section for a period of (60) minutes of this The lesson at a rate of (2) two lessons per week on Mondays and Wednesdays for a period of (3) consecutive weeks. As for the students of the control group in the section) A (They apply the same educational exercises, but without technical brain stimulation) Fit Light(The experiment began by applying the pre-tests on Sunday, corresponding to (11/5/2023), and then the application began for the period extending from Monday, corresponding to (11/6/2023) until Wednesday, corresponding to (11/22/2023). The experiment ended with the application of the post-tests on Thursday, corresponding to (11/23/2023), and the results of the pre- and post-tests were processed by the social statistical portfolio system) SPSS-V ,(26to calculate percentage values, the Cronbach's alpha reliability coefficient, Levene's test for homogeneity of variance, the arithmetic mean, the standard deviation, and the) t-test (for correlated samples, and test) t-test (for uncorrelated samples.

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Results:

Table (1) shows the results of the pre-tests between the two groups

Variables	Group And their num		Q	+	)Live	)S	)t	)Sa	the differen
Functional thinking	empiricism	2	49.	5.1	1.03	0.	2.5	0.0	Not a sig
	Female officer	2	45.	4.3					
Motor transport betwe body parts	empiricism	2	195	13.	0.03	0.	0.2	0.8	Not a sig
	Female officer	2	196	13.					
Kinetic flow as a functi of change in momentu	empiricism	2	176.	0.9	0.00	0.	0.0	0.9	Not a sig
	Female officer	2	176.	0.9					
Learn to run 400 metr	empiricism	2	2.8	1.4	0.77	0.	0.	0.7	Not a sig
	Female officer	2	2.9	1.1					

The statistical difference is not significant for the expression of parity and line of initiation when the Sig is greater than (0.05) with a degree of freedom(38)

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Table (2) shows the results of the pre- and post-tests for each group

Variables	The gr and number	Comparis	Q	+A	F	F-H	)t(	)Say	the differen
Functiona thinking	empiricis (20)	previous	49.75	5.159	17.35	5.153	15.05	0.00	Dal
		the next	67.1	1.553					
	Female officer (20)	previous	45.85	4.308	11.9	5.647	9.425	0.00	Dal
		the next	57.75	3.905					
Motor transport between body par	empiricis (20)	previous	195.15	13.66	44.8	16.71	11.98	0.00	Dal
		the next	239.95	8.513					
	Female officer (20)	previous	196.2	13.87	15.45	12.31	5.609	0.00	Dal
		the next	211.65	9.631					
Kinetic f as a funct of change momentu	empiricis (20)	previous	176.52	0.932	35.69	3.053	52.28	0.00	Dal
		the next	212.22	3.205					
	The fem officer (20)	previous	176.51	0.941	20.97	8.518	11.00	0.00	Dal
		the next	197.48	8.68					
Learn run metres	empiricis (20)	previous	2.81	1.436	5.5	1.701	14.45	0.00	Dal
		the next	8.3	0.733					
	Female officer (20)	previous	2.95	1.191	2.3	1.525	6.744	0.00	Dal
		the next	5.25	0.851					

The statistical difference is significant to express the pre-post comparison between the group when it is a score)) Say Less than (0.05) degree of freedom(19)

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Table (3) shows the results of the posttests between the two groups

Variables And the unit measurement)degree(	Group And th number		Q	+A	)t(	)Say(	the differen
Career planning	empiricism	20	67.1	1.553	9.95	0.000	Dal
	Female offic	20	57.75	3.905			
Motor transp between body pa)kg.m/s(	empiricism	20	239.95	8.513	9.846	0.000	Dal
	Female offic	20	211.65	9.631			
Kinetic flow as function of chang momentum) kg.m	empiricism	20	212.224	3.205	7.126	0.000	Dal
	Female offic	20	197.481	8.68			
Learn to run metres)degree(	empiricism	20	8.3	0.733	12.149	0.000	Dal
	Female offic	20	5.25	0.851			

The statistical difference is significant to express the comparison between the two groups when the Sig score is less than (0.05) with a degree of freedom(38)

Discussion:

From reviewing the results of Table (2), it is clear that the students of both research groups improved their dimensional values for each of the dependent variables, and from reviewing the results of Table (3), it is clear that the students of the experimental group who received their education with brain stimulation technology had a clear superiority) .Fit Light (over their peers in the control group in all of these variables. The researcher attributes the emergence of these results to the positive role of enriching the educational environment using technology) .Fit Light (To stimulate the brain, (Nashwan & Alzoubi, 2022) activate the senses, especially sight, and activate functional thinking in performance, especially in the fourth distance in the event running (400) metres, as the use of technology helped) Fit Light (In mental stimulation and reducing the phenomenon of fatigue imposed by the special endurance for running the distance of this event, which allows the student to increase the opportunity for quick functional thinking and attention to the positions of his body, which appeared clearly in increasing his ability to control parts of the body, which was proven by the results of improvements in the kinematic aspects of each of the motor transfer between Parts of the body to support the technical performance of running this event, as well as the flow of movement in terms of change in momentum. (Nashwan & Allawi, 2021) The researcher also attributes this improvement to the role of practice and application for a period of (6) consecutive weeks, which helped the repetition factor increase neuromuscular

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control, which is one of the most important requirements for technical direction of skill performance. To achieve this effectiveness, the researcher invested in the use of technology)Fit Light (In educational exercises, without putting pressure on the student to increase the load on their mass for each of the kinematic aspects investigated, the improvement in the level of functional thinking had a positive role in supporting improvements in each of the kinematic aspects and learning motor performance for running (400) metres.(Al et al., 2022)

"The learner can continue to perform well in the event that he is exposed to mental fatigue by using the process of cognitive activation, compensatory effort, and changing the rules of performance by investing information repeatedly and repeatedly at the same time, in addition to using cognitive rules that require less mental effort) ".Ghada, 2006, 55-56)

Also" ,in the succession of exercises, the relationship between the brain and muscles is strengthened, and repetition helps to neglect external stimuli in performing the movement, and this succession serves to subject the body to a change in improving strength and athletic skill in the end) ".lee & Brenda, 2007, P: 157)

"Exercises should be closely linked to the movements in the skill, and the training program should focus on the muscles working in the performance itself) ".Frizzell & Dunn, 2015, P: 404-405)

Also" ,the learner needs to be able to control his attention process to control it and focus attention on the stimuli that are important to him, and then to be able to make appropriate decisions that are not influenced by stimuli far away from him) ".Saif, 2018, p. 5)

For career thinking) Functional thinking (plays a positive role when using analytical and experimental methods and thoughtful planning, and this type of thinking must be learned with mastery, which is the thinking related to formal logic, constructive research, and efficiency, and the classification of thinking into functional thinking/subjective thinking is rather a classification of truth/value) .Fact/ Value) (Youssef, 2005)

Also" ,the change in momentum can be measured by the stability of the athlete's mass and the change in his speed or not, to indicate the smoothness of the movement, whether it was done well or poorly. This is a real quantitative measure that expresses an aspect of the movement that, until the present time, was measured descriptively by looking (qualitatively), so It can be said that Smoothness of motion = change in momentum Considering that good force propulsion means good flow according to Newton's second law) ".Sarih Wahbi, 2010, p. 28) (Yaroub et al., 2024)

"The nervous signals in the muscle are strengthened by the effect of physical exercise on the efficiency of the motor system, and it stimulates the movement centers in the cerebral cortex and inhibits the emotional centers) ".Siddiq et al., 2012, p. 165)

"When the player varies exercises between muscle contraction and static, a variety of muscles in the arms are stimulated, including the biceps and triceps. This helps balance muscle development and avoid overlooking the strengthening of certain muscles at the expense of others) .".Baker & Other, 2023, P: 95)

"The ability to generate force and movement at high speed occurs by exchanging muscle work when the muscle works to stretch before it contracts. When the muscle expands, kinetic energy is stored and then released in the subsequent muscle contraction to generate fast and strong force and movement) ".COTE, 2020)،

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Conclusion:

Conclusions Recommendations:

1- Educational exercises help stimulate the brain technically) Fit Light (In improving functional thinking among third-year students in the Department of Physical Education and Sports Sciences.
2- Educational exercises help stimulate the brain technically) Fit Light (In improving some kinematic aspects of both motor transfer between parts of the body and motor flow in terms of change in momentum among third-year students in the Department of Physical Education and Sports Sciences.
3- Educational exercises help stimulate the brain technically) Fit Light (In improving learning to run (400) meters among third-year students in the Department of Physical Education and Sports Sciences.
4- It is necessary to increase the capabilities of athletics teachers to enable them to apply educational exercises by technologically stimulating the brain) Fit Light (Because of its important role in motor learning for both the mental and skill factor.

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Appendix (1) Functional Thought Scale

Choose the statements in terms of their applicability to you, by writing in the box to the left of the five statements the actual preference that applies to you (1, 2, 3, 4, 5), given that (5) represents the behavior that applies most to you and (1) represents the behavior that applies least to you. upon you.

Firstly, when there is a conflict (argument) between people over an idea, I tend prefer the side that:		
A	**It expresses the values and ideals included in the topic in the best way.**	
fo	**He knows and tries to end the conflict.**	
C	**It reflects my personal opinions and experiences in the best way.**	
of th	**Expresses the idea effectively and concisely**	
e	**The situation is more logical.**	
Secondly: When I start working on a group project, what matters most to me is:		
A	**Understand how rewarding (profitable) the project is for me and others.**	
fo	**Determine what we should do about the project.**	
C	**Organizing and arranging the project and not stopping it.**	
of th	**Understand the project goals and value.**	
e	**Discover the goals and values of individuals in the group.**	
Third, in general, I can absorb new ideas in a better way by:		
A	**How it differs from other ideas**	
fo	**Apply it to difficult situations.**	
C	**Understand how similar they are to familiar ideas**	
of th	**Focus and careful analysis of it.**	
e	**Link and return them to current or future activities.**	
Fourth: Graphs and illustrations in a book or article, for me, are usually:		
A	**It is useful if it is combined and explained in a narrative style (speech).**	
fo	**It is no more or less useful than the other method.**	

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C	More useful than narrative style (speech) if it is accurate	
of th	It is useful if it raises questions about the narrative style.	
e	It is useful if it explains important facts .	
Fifth: If I am asked to do a project (research), I will likely start with:		
A	Deciding whether to do it alone or need help.	
fo	Determine whether the project will be implemented or not.	
C	Anticipate the results likely to appear.	
of th	Try to put the project into a detailed perspective diagram.	
e	Try to put the project in as comprehensive a format as possible.	
Sixth: If I were asked to collect information from people about something of inter to society, I would prefer to:		
A	Meet them in small groups and ask general questions.	
fo	Hold an open meeting and ask them to give their views.	
C	I interview each individual and ask specific questions.	
of th	I ask them to provide me with information that they have that is clos related to the topic.	
e	I meet important people informally to get their thoughts.	
Seventh: I believe that something is true if:		
A	It seems logical and scientific.	
fo	It is consistent with other things that I think are true.	
C	It proves to be good in practice.	
of th	It was contrary to the opposing opinion.	
e	It can be verified personally with observable facts.	
Eighth: When I read a magazine article during my free time, it will likely be about		
A	How does a person solve a personal or social problem?	
fo	A controversial political or social issue.	

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C	A true account of someone's interesting experience.	
of th	An interesting comic character or event characterized by fun.	
e	A summary of historical or scientific research.	
Ninth: When reading a report at work, I will pay more attention to:		
A	Whether the recommendations are achievable on the ground.	
fo	The relationship of the results to my personal experiences.	
C	Validity of the results of the stored data.	
of th	Inferences and conclusions made from data.	
e	The report writer's understanding of the goals and objectives.	
Tenth: When I have work to do, the first thing I want to know is:		
A	Why the work is worth doing.	
fo	What are the immediate benefits of completing the work?	
C	The best way to get it done.	
of th	What effect does it have on other work that needs to be completed?	
e	Who is the person who wants to get the work done? And when?	
Eleventh: Usually, I learn more about how to do something new by:		
A	Analyze how to do it in the best way.	
fo	I wish there was someone to show me how to do it.	
C	Start doing this thing as soon as possible.	
of th	Listening to different points of view on how to accomplish it.	
e	Understand how it relates to other things I know.	
Twelfth: If I were to take one of the tests, I would prefer:		
A	An oral presentation covering what I know.	
fo	A roundup of how I applied what I learned.	

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C	An objective report covering the theoretical background of the topic a the research conducted on it.	
of th	A set of objective, problem-oriented questions about the test material.	
e	Discussing other people who are also being tested.	
Thirteenth: In general, I am more inclined to:		
A	Find existing methods that work and use them as much as possible.	
fo	I number the means and methods that must work.	
C	Prediction about how different methods might work together	
of th	Discover better and newer methods.	
e	I am trying to find ways and means that work in a new and better way.	
Fourteenth: People whose abilities I respect are likely to be:		
A	Economists and engineers.	
fo	Writers and teachers.	
C	Farmers and journalists.	
of th	Philosophers and consultants.	
e	Project managers and court presidents.	
Fifteenth: In general, I find an idea useful if it:		
A	It helps to clarify my own experiences and observations.	
fo	It has to do with the theories and ideas you have learned.	
C	You explain things to me in a new way.	
of th	Explains relevant situations in an organized manner	
e	It has a tangible practical application.	
Sixteenth: When I read an article about a controversial topic, I prefer to:		
A	The article shows me the benefits of choosing a point of view	

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fo	The article highlights both sides of the issue and explains the conf between them.	
C	The article summarizes the issues involved in a logical manner.	
of th	The essay defines the values that the writer supports.	
e	The article clarifies the facts in the field of controversy.	
Seventeenth: If I read a book outside my field of specialization, it is most lik because:		
A	Desire to depart from my field of specialization for a change.	
fo	Curiosity to learn a lot about this special topic.	
C	Specific interest to improve my professional knowledge.	
of th	Someone I respect told me it's helpful.	
e	Desire to increase general knowledge.	
Eighteenth: If I encounter a technical problem for the first time, I must:		
A	I think of a number of ways this might get in the way of solving the probl	
fo	I'm looking for methods that others might have used to solve it.	
C	I'm trying to find the best solution to solve it.	
of th	Find ways to solve the problem quickly.	
e	I try to link it back to a broader issue or theory.	

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