

Development of Individual and Motivational Parallel Model on Education (IMPME)

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In this study we reinforce the importance of intrinsic motivation for education by proposing individual and motivational parallel model on education (IMPME) based on the systematized individual motivational data. We show that students who study by IMPME can improve their individual style for education by the reinforcement of their intrinsic motivation. Finally, we show that IMPME have much effect on a balanced education promoting the intrinsic motivation for individual student that is not generally taken into consideration in the school education systems.

Keywords Individuality, Intrinsic motivation, Principal component analysis, Individual and motivational parallel model on education (IMPME)

1. Introduction

From the student's very first step of learning the alphabet up until his or her preparation for graduation exams, the student suffers from family pressure. Secondary, this pressure is increased by societal influences. In educational popular programs there is no space to improve the intrinsic motivation. Instead, there are just various pressures which function as extrinsic motivational events. Therefore, to be a student is more than to make a mechanical memorization of information; it means to be intrinsically motivated for a creative reprocess of the reality. In this way, students who study by intrinsic motivation feel free from social pressures and are able to improve their individuality by reinforcing their personal creativity needs and free judgment.

From our point of view, education is information and redeveloping reality. When we study, we are growing in our individuality as well as in our perception of the real world. School education is generally carried out according to educational programs with imposition of goal, deadline, competition, evaluation, feedback and reward to motivate extrinsically. Therefore, individual education and intrinsic motivation [1] are attached importance in this study. Most of the students will not be able to have a feeling of self-determination and will not be able to study in accordance with intrinsic motivation as a result of the above programs of school education. In addition, students will not be saved from a feeling of resignation and passivity if they study only by extrinsic motivational methods. Accordingly we research an effective model in which students can have a feeling of self-determination and study in accordance with intrinsic motivation.

In a previous research [2], we showed that the students' motivational information starts to be an initial concern, whereas the methodologies are secondary. Moreover, we showed by respect to the individual internal clock to learn an individual rhythm of learning; behavior by mistakes, continuous individual classes and program adaptations that educational projects can be individualized by basic information to raise effective intrinsic motivation to learn.

2. Methods

At present, one of the authors teaches the individual lessons of Portuguese for Brazilian and Japanese children and adults at their homes in Japan. Some of the students have a feeling of self-determination, but others do not. For more than one year, we have been observing and interviewing the students, their families and extended social relations about the students' attributes, behaviors, attitudes, speaking, mindset and so on. As an individual teacher working inside the students' homes, in individual cases, avoiding as much as possible the extrinsic pressure that using cameras and voice recorder machines would give (they could undermine the natural intrinsic motivation) the students' natural behavior starts to appear. In this way, we grow in awareness of their individual style [3]. There is an individualization of each one's rhythm of learning, their needed material, the necessary teacher technique and the way to speak with them.

In order to find what events promote the students' intrinsic motivation in the home lesson of Portuguese, 50 students were asked the following four questions by interview at the beginning of the home lesson from February 2003: 1) Why do you have to study? 2) Why do you want to study? 3) What do you prefer to do in your class? 4) What would you like your teacher to use for motivational tools? The answers of the four questions were written in the recording sheets by the first author. The first question shows the extrinsic motivational factors and the other questions show the intrinsic motivational factors. Therefore by analyzing the answers, 50 students can be divided into the two groups: the extrinsic motivation group and the intrinsic motivation group.

Next from the above answers, we extracted the 12 events that are the important events for promoting intrinsic motivation in the home lesson of Portuguese: 1) Listening, 2) Reading, 3) Coloring, 4) Coping, 5) Drawing, 6) Speaking, 7) Music, 8) Singing, 9) Writing, 10) Sports, 11) Games, 12) Movies. We carried out the home lesson of Portuguese for 50 students using the 12 events. The preferences of 50 students for 12 events were observed in the home lesson. As the results of the observation, the levels of preferences of 50 students for the 12 events were graded from 0 to 3 points. No preference is 0 point. Low level of preference is 1 point. Middle level of preference is 2 points. High level of preference is 3 points. We applied principal component analysis to the correlation matrix of the points of 12 events in 50 students with SPSS® application software [4].

We divided the 12 events into the active and passive events. For example, some students prefer to just listen (passive behavior), on the other hand the other students prefer to speak about a topic (active behavior). Classifying the intrinsic motivated students and the extrinsic motivated students by the passive and active categories facilitates interpreting the meaning of the principal components.

3. Results and Discussion

3.1 Component Matrix

As a result of principal component analysis, the validity of the Kaiser-Meyer-Olkin (KMO) was 0.628, and most of their communality was greater than 0.8. Therefore, we think that we can use our data in this paper from most of our major studies. The 12 principal components were extracted by this analysis. In this paper we used the 4 principal components whose eigenvalue is more than 1.0. Component which had a strong correlation to motivation item was indicated with asterisk character (*) on Table 1.

Table 1 Component Matrix and Communality

MOTIVATION (variation items)	COMPONENT				COMMUNALITY
	1	2	3	4	
LISTENING	0.173	*0.694	0.132	-0.496	0.775
READING	0.007	*0.924	-0.047	-0.174	0.886

COLORING	*0.907	-0.081	-0.118	-0.037	0.845
COPING	*0.819	-0.013	-0.340	-0.297	0.874
DRAWING	*0.860	-0.248	0.062	-0.130	0.822
SPEAKING	-0.003	0.470	-0.706	*0.337	0.834
MUSIC	-0.096	*0.602	0.281	*0.618	0.832
SINGING	*0.756	0.246	-0.077	*0.355	0.764
WRITING	0.474	0.210	-0.232	-0.002	0.323
SPORTS	0.700	-0.274	0.087	*0.312	0.670
GAMES	0.544	-0.006	*0.532	0.180	0.611
MOVIES	0.320	0.439	*0.480	-0.148	0.546

Component1: Preference for no stressed activities: this component has a strong correlation to coloring, drawing and coping components in the variation items.

Component2: Preference for the study by lyrics (music lyrics and poems): this component has a strong correlation to reading, listening and music components in the variation items.

Component3: Preference for study by media (video recorder, voice recorder, video camera, computer software, web sites and correlates: this component has a strong correlation to games and movies components in the variation items.

Component4: Active way of learning (sports, social games, body movements and correlates: this component has a strong correlation to music, singing, speaking and sports components in the variation items.

We also checked principal component scores as we showed them on Table 2. We matched these scores with individual students' cases.

Table 2 Principal component score for students

Components	Highest score	Students' number	Lowest Score	Students' number
1	2.37650	14 and 15	-.98998	44
2	1.03989	47	-3.04044	10
3	2.49034	18	-1.62095	7
4	2.62996	40	-2.58422	4

3.2 Individual Case

In the students of table 2, their preferences for the active and passive events and specific components of motivation were shown:

Component 1: Students 14 and 15 (children) were the equally highest level in group one, involving no stressed way of learning; they have never been extrinsic motivated by their family or society for the goal of studying, and they also showed strong preferences for passive events. On the other hand, student 44 (adult) was the lowest level in the same group, because this person was strongly motivated by active events and a stressed way of teaching. Student 44 also gave up studying when there were no teacher pressures or active classes.

Component 2: Student 47 (adult) was free from extrinsic motivation and he also had the highest level on study of lyrics preferences, because his individual preferences for active events were very strong for reading and making poems. Moreover, he was very satisfied to sing. On the other hand, student 10 (child) disliked reading and musical events, because this person also disliked active topics, therefore, he had the lowest level in this group.

Component 3: Student 18 (teenager) felt strong preferences for passive events, frequently using computer software, games and video recorders; he was the highest level on media preferences. On the other hand, student 7 (child) preferred more active events and his level was the lowest in this group.

Component 4: Student 40 (adult) was the highest level on active way of learning preferences, because he strongly enjoyed activities in the class, like sports. The student 4 (children) was lowest level in this group because he disliked doing activities or extrinsic events.

4. Conclusion

As stated above, we think that study of these components could also provide information for the management of individual differences and improving students' intrinsic motivation in education. The IMPME works in two ways: searching the intrapersonal regulations of motivation and external factors that are able to improve the self-determination or undermine it. Such modeling has the quality to allow choice for the students and to provide information that can help them to be autonomous for the learning (self-administration). Following this intrapersonal regulation of our educational experiment, it was possible to study the pure intrinsic motivational feeling of study and to analyze the factors which pushed students to be more, less, or non-intrinsically motivated.

By this individualized method, it began to be possible to find the personal active and passive motivational factors, to analyze and to normalize then and to make the controlling of the subjects' extrinsic and intrinsic motivation. Also, this can be used as information for a balanced control between the motivational components necessary for the individual motivational improvement. This individual and motivational parallel model on education (IMPME) shows that it is possible to study the pure intrinsic motivational feeling of study and to analyze the different factors which push students to be more, less or non-intrinsically motivated. The IMPME provides control for the balance of motivation and guidance for students and their family or superiors for more motivational ways of teaching and learning, and it facilitated the creation of intrinsic motivational programs.

At this time we are working on the controlling the balance of extrinsic events and the development of intrinsic motivation, such as using feedback as informational and intrinsic motivation.

References

- [1] Deci, E.L., & Ryan, R.M. *Intrinsic Motivation and Self-determination in Human Behavior*, New York: Plenum Press (1985).
- [2] Camargo, L.A., Fujiwara, K., Kawabata, H. *A Study on the Intrinsic Motivation*, Proceedings of the Seventh International Conference on Industrial Management, pp.402-405 (2004).
- [3] Rubin, J, Thompson, I. *How to be a More Successful Language Learner*. Heinle & Heinle Publishers, Inc. Boston, Massachusetts (1982).
- [4] SPSS®Base 9.0. *Applications Guide*. SPSS (1990).