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A Case Study Focusing on the Motivational Factors Affecting Vocational Students in Mathematics Lectures

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A Case Study Focusing on the Motivational Factors Affecting Vocational Students in Mathematics Lectures

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Abstract

The purpose of the study is to determine the motivational factors affecting the students in mathematics lectures. The participants were senior 30 students in the department of computer programming of Vocational College in Hitit University. These 30 students all attended Mathematics II classes during 2012-2013 Spring semester and after the first examination, five students were chosen for the interview according to their performance in the exam. The students who showed the 1st and 2nd highest and the lowest performance in the exam were asked to participate. And one student with a lower score and one with an average score were voluntarily included in the interview. To be able to conduct an interview with the students, the Miller and Rollnick (1991) style of motivational interview is preferred. This method of interviewing emphasises using three crucial aspects; collaboration, evocation, and autonomy to be able to enhance intrinsic motivational factors according to (Miller, 1991, 2002). In this approach behaviour change is crucial, but we here use the advantage of this style of interviewing to make our students feel comfortable and make them aware of the motivational factors that affecting their achievement. The pilot interview is first conducted to the students of Textile Technologies Department in Hitit University. After making revisions to the first interview, the audio taped semi-structured interview is conducted to the five students who were chosen before. The qualitative data analysis has been done according to the qualitative approach of Miles and Huberman (1994). The qualitative analysis has been done and in one case the intrinsic and extrinsic motivational indices were determined. The results show that even in a underestimated environment, students learn how to motivate themselves and they can show high motivation, both intrinsically and extrinsically.

Key words:

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Introduction

In the past century mathematical research considering motivational factors has showed a big rise in the world. Although this wide growth has affected positively the educational outcomes in Turkey, there has still been a lot to do. Considering the students in the vocational colleges, we may easily conclude that these students are rarely taken into consideration, when it comes to motivational factors related to mathematical learning; it is a rarely searched area in Turkey.

Vocational Colleges can be viewed as the weakest chain of Turkish undergraduate system. Although it has been emphasized that the students of vocational colleges are crucial for the industrial sectors to be employed as the main element of production, these Vocational Colleges are the most underestimated parts of a university.

Most of the time the placement of the university is in the campus area is the worst one, the staff is only composed of lecturers. When we look at the quality of these lecturers, unfortunately these lecturers are commonly having fewer qualities when compared to the other faculties of a university.

In this entire weak atmosphere, the students of a Vocational College are also not having good qualities when we compare them with the other students of a university. Actually these students get lower results in the national university entrance examination, and commonly since they have been graduated from the vocational high schools they directly start these two year education without having an exam.

When we look at the backgrounds of students, we see that their performance was still lower in the high school. Vocational high schools, similarly the high schools are preferred by students only who couldn't go to another better school. Actually the vocational high schools are the last chance for them. When you ask a teacher working in a Vocational College about his/ her school, the first words of an answer commonly comes as " You know, the worst students are choosing us."

Besides all that these students are coming from the families which have socioeconomically lower status; most of the parents do not have any higher education then primary school. Mothers are housewives and the families have very low income. That's why students prefer working in part time jobs.

The class atmosphere is totally different in this shape of an environment. Less motivated students really have difficulties in attending the classes. Even when they attend the classes they cannot be motivated by the lectures, they are making noise, speaking with others, etc...

But what happens when it comes to mathematics? The answer is still easy to realize, these students are showing a very bad performance in mathematics. Mainly, they see mathematics as a very hard discipline, which they can never make an achievement. The common quotations which can be derived from a vocational students' everyday conversation is unfortunately as follows: "Why are we learning mathematics? We will not need it in the future."

But in this kind of an environment, having the same background with the other students, there are still some highly motivated students who show a high degree of achievement in mathematics and hence what makes these students different? Basically in this study our aim is to examine the motivational factors lying behind this achievement considering mainly intrinsic motivation.

Literature Review

Gottfried (1990) defines academic motivation as "enjoyment of school learning characterized by a mastery orientation; curiosity; persistence; task-endogeny; and the learning of challenging, difficult, and novel tasks".

We will concentrate mainly on the intrinsic and extrinsic motivational factors in this study. According to White (1959), intrinsic motivation helps people to interact with environment effectively, and in his definition of intrinsic motivation he makes an emphasis on the importance of sense of one's own world.

In Self-Determination Theory Deci and Ryan (1985) states that:

> "*The most basic distinction is between intrinsic motivation, which refers to doing something because it is inherently interesting or enjoyable, and extrinsic motivation, which refers to doing something because it leads to a separable outcome."*

According to Deci and Ryan (1985), people are engaged in a task intrinsically for themselves to be able to gain satisfaction and pleasure. When their behaviors are considered, these people show psychological well-being, interest, enjoyment, fun, and persistence (Ryan & Deci, 2000).

According to (Ryan and Deci, 2000) (pp. 56),

"Intrinsic motivation is defined as the doing of an activity for its inherent satisfaction rather than for some separable consequence. When intrinsically motivated, a person is moved to act for the fun or challenge entailed rather than because of external products, pressures or reward."

And according to (Ryan and Deci, 2000)",

> *"Extrinsic motivation is a construct that pertains whenever an activity is done in order to attain some separable outcome. Extrinsic motivation thus contrasts with intrinsic motivation, which refers to doing an activity simply for the enjoyment of the activity itself, rather than its instrumental value.*

Method

Sample

The participants were senior 30 students in the department of computer programming of Vocational College in Hitit University. These 30 students all attended Mathematics I classes during 2012-2013 Spring semester and after the first examination, five students were chosen for the interview according to their performance in the exam. The students who showed the 1st and 2nd highest and the lowest performance in the exam were asked to participate. And one student with a lower score and one with an average score were voluntarily included in the interview.

Instrument

To be able to conduct an interview with the students, the Miller and Rollnick (1991) style of motivational interview is preferred. This method of interviewing emphasises using three crucial aspects; collaboration, evocation, and autonomy to be able to enhance intrinsic motivational factors according to (Miller, 1991, 2002). In this approach behaviour change is crucial, but we here use the advantage of this style of interviewing to make our students feel comfortable and make them aware of the motivational factors that affecting their achievement.

Data Collection and Analysis

The pilot interview is first conducted to the students of Textile Technologies Department in Hitit University. After making revisions to the first interview, the audio taped semi-structured interview is conducted to the five students who were chosen before.

All the five students' interview was transcribed and coded, but here in our study we have chosen one student named Asiye to examine the motivational factors. Her interview was about 16 minutes long. The transcription has been completed.

The qualitative data analysis has been done according to the qualitative approach of Miles and Huberman (1994).

Results

Only one case has been studied according to Miles and Hubermann (1994). The answers were analysed first according to the intrinsic motivational factors: Interest/enjoyment, effort/importance, pressure/tension, perceived competence, and perceived autonomy. Secondly the answers were analysed according to the extrinsic motivational factors. Also the factors which are indicating attribution theory were also coded and categorised in this manner.

Although the environmental factors are indicating an underestimated atmosphere, students may still show a high motivation, when both intrinsic and

extrinsic indices were taken into consideration. Interestingly although her background in mathematics and her overall success in her education are low, she showed a high degree of motivation.

In Table 1, there are some items which are chosen from her interview showing a high degree of motivation, since Turkish was used during the interviews; here we put the examples in Turkish.

Table 1. *Examples of the Answers in the Interview*

Intrinsic Motivational Factors	**Examples of the answers in the interview**
Perceived competence	Ben herkesten öndeyim filan. Yani herkesle eşit seviyede olmak güzel. Ama önde olmak daha da güzel. En arkada olmak kötü. Ben en arkada olmayı istemiyorum. Ya eşit, ya herkesten bir adım önde.
	Çözeriz yani ne var çocuk oyuncağı. Ama şey yine çözemesek de en azından kendimizi avutuyorduk. Yaparız ama soru zor geldi, diğerlerini yapıyoduk a bak, falan.
Interest/Enjoyment	Matematiği seviyorum, yaptıkça daha bir seviyorum. Fonksiyonlar konusunu yaptıkça ilgim daha da bir artıyordu.
Effort/Importance	Benim kendi, şey ben öğrenmeyi istiyodum yani. Matematik hani şey. Ben yapılmayan şeyi yaptığımda kendimi daha bir ayrıcalıklı hissederim. Genelde herkes matematik yapamaz ya ben yapmalıyım. Hani böyle bir gözle bakardım. Hala da böyle bakıyorum mesela. Yani sınıfta yapamazlar ben o soruyu yapmalıyım ki ben kendimi ispatlamalıyım. Kendimi kendime ispatlamaya çalışyorum öyle deyim.
Pressure/tension	Eğer bu sefer yaptıysam finale de aynı şekilde yapabilirim. Benim bu dersi bırakmaya şeyim yok. Bırakma şansım yok. Demek ki ben bu dersi geçebilirim. Biraz daha sabret.
Perceived Autonomy	Hani ne bileyim yani şey ben ikisine de olabildiğince sözele biraz daha ağırlık veriyosam, hemen matematiğe. Onu sevmeye çalışıyorum. Soruları, şey gibi zaten işlemler öyle ya en basitten zora doğru. Sorular, örnekler böyle gidiyor. Kitaplar. En basitten çözmeye çalışıyordum.

Discussion

There are some students who are rally showing a high motivation in Vocational Colleges. Then further, better studies have to be done to be able to increase motivation in these schools. Further care and studies will lead to more

effective lectures in these schools and these studies may lead to a change in Vocational Schools in many ways.

References

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Miller, W. R., & Rollnick, S. (1991*). Motivational Interviewing: Preparing People to Change Addictive Behaviors*. New York: Guilford Press.

Miller, W. R., & Rollnick, S. (2002). *Motivational Interviewing (2nd Edition): Preparing People for Change*. New York: Guilford Press.

Ryan, M. R., & Deci, L. E. (2000). Self-determination and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, *55*, 68–78.

Stipek, D. J. (1996). Motivation and instruction. In D. C. Berliner & R. C. Calfee (Eds.), *Handbook of educational psychology* (pp. 85–113). New York: Macmillan.