Predictors of Intrinsic Motivation among University Students: An Application of Expectancy-Value Theory

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Abstract
There has been much debate on the Malaysian education system that ranges from unemployment to lack of soft skills. None of the local universities are ranked within the top 50 Asian University by Times Higher Education. The country also achieves below global average scores in baseline assessment among its 15-year old students in mathematics and science conducted by the OECD. Another worrisome trend involves graduates becoming pickier in selecting the programs, and opting for the easier route by enrolling in courses that would land them career positions within the secured civil service. Considering these issues, there is a need to understand the motivation of students better to excel in their studies and the factors that drive them to achieve good grades. This study seeks to investigate the relationship between internal and external factors that drive students to be intrinsically motivated to perform in their studies. The internal factors are psychological that comprises of perceived competence and self-determination, while the external factors comprise of social support and learning environment. A field survey involving students from sciences and

social sciences disciplines yields 621 usable responses. Results from regression analysis indicate that all the factors are significant in predicting the intrinsic motivation of the students. Self-determination is found to be the most influential factor, while the learning environment is regarded as the least important determinant in this research. Subsequently, implications for both academics and practitioners are further discussed in this paper.

Keywords: Intrinsic Motivation, Perceived Competence, Self-Determination, Social Support, Learning Environment.

Predictores de la motivación intrínseca entre estudiantes universitarios: una aplicación de la teoría de la expectativa-valor.

Resumen

Ha habido mucho debate sobre el sistema educativo de Malasia que va desde el desempleo hasta la falta de habilidades sociales. Ninguna de las universidades locales está clasificada dentro de las 50 mejores universidades asiáticas por Times Higher Education. El país también alcanza puntajes promedio globales por debajo de la evaluación de referencia entre sus estudiantes de 15 años en matemáticas y ciencias conducidos por la OCDE. Otra tendencia preocupante es que los graduados se vuelvan más exigentes al seleccionar los programas y opten por la ruta más fácil al inscribirse en cursos que les permitan obtener puestos de carrera dentro de la función pública segura. En consideración a estos temas, es necesario comprender mejor la motivación de los estudiantes para sobresalir en sus estudios y los factores que los impulsan a lograr buenas calificaciones. Este estudio busca investigar la relación entre los factores internos y externos que llevan a los estudiantes a tener una motivación

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intrínseca para desempeñarse en sus estudios. Los factores internos son de naturaleza psicológica que comprende la competencia percibida y la autodeterminación, mientras que los factores externos comprenden el apoyo social y el entorno de aprendizaje. Una encuesta de campo que involucra a estudiantes de ciencias y disciplinas de ciencias sociales arroja 621 respuestas utilizables. Los resultados del análisis de regresión indican que todos los factores son significativos para predecir la motivación intrínseca de los estudiantes. Se encuentra que la autodeterminación es el factor más influyente, mientras que el ambiente de aprendizaje se considera el determinante menos importante en esta investigación. Posteriormente, las implicaciones tanto para académicos como para profesionales se discuten más a fondo en este documento.

Palabras clave: Motivación intrínseca, competencia percibida, autodeterminación, apoyo social, entorno de aprendizaje.

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1.   Introduction

The social and economic development of the country is directly linked with student academic performance which plays an important role in producing the best quality graduates who will become great leader and manpower for the country thus responsible for the country's economic and social development. However, the living life of students in colleges has always been challenging (Tharbe, 2006). Students in colleges often regard their academic life as stressful and demanding. Motivation is the most important factor that educators can target to improve learning. D'souza and (Maheshwari D'Souza & Maheshwari, 2015) believed that students should ideally have many sources of motivation in their learning experience in each class. When a student actively engages in learning because of curiosity, interest, enjoyment, or to achieve his or her own intellectual and personal goals, he or she can be described as intrinsically motivated. On average, intrinsically motivated students were more successful in terms of grades and personal than extrinsically motivated students. They are likely to pursue lifelong learning and to continue educating themselves after graduation because they sincerely engage in academic activities without the guidance of an external motivation (Brewster & Fager, 2000).

The expectancy-value theory developed by Eccles (1983) been one of the most important views of the nature of achievement motivation, that discussed how individuals expectancies for success, subjective task values, and other achievement belief mediate their motivation and achievement in educational settings (Wigfield & Cambria, 2010). Therefore, the present study attempts to investigate the influential factors such as perceived competence, learning environment, and goal orientation on intrinsic motivation using expectancy-value theory among university students in Peninsular Malaysia.

2.   Literature Review

Intrinsic Motivation

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According to MacIntyre, MacMaster, and Baker (2001), motivation is defined as an attribute of the individual describing the psychological qualities underlying behavior concerning a particular task. Intrinsic motivation is defined as the doing of an activity for its inherent satisfactions rather than for some separable consequence. It refers to doing something because it is inherently interesting or enjoyable and results in high-quality learning and creativity (Ryan & Deci, 2000). In other words, the motivation to engage in a behavior arises from within the individual because it is intrinsically rewarding. This contrasts with extrinsic motivation, where it is done for the sake of some external outcome. Being motivated can assist students in overcoming their problems. Motivation can create confidence in one's ability; along with an increased value of education and desire to learn (Pelletier, Michelle, Vallerand & Nathalie, 2001).

Motivation is an essential element that drives a human being to strive for better performance. According to Coon and Mitterer (2012), intrinsic motivation is regarded as a driving factor that exists internally from a human being and not because of external factors. In other words, intrinsic motivation is a motivation that arises from inside an individual which encourage him or her to achieve something for himself or herself without intention to please other people. Intrinsic motivation has emerged as an essential phenomenon for educators a natural wellspring of learning and achievement that can be systematically catalyzed or undermined by parent and teacher practices (Ryan & Stiller, 1991).

Motivation affects cognitive processes. Motivation affects what learners pay attention to and how effectively they process it (Pintrich & Schunk, 2002; Pugh and Bergin, 2006). For instance, motivated learners often make a concerted effort to truly understand classroom material to learn it meaningfully and consider how they might use it in their own lives. The motivational factors are contributing to a healthy lifestyle that was the critical component in identifying the appropriate research-based

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interventions for young adults (Vernadakis, Kouli, Tsitskari, Gioftsidou & Antoniou, 2014).

Perceived Competence

Researchers have argued that perceived competence is regarded as rudimentary psychological predictors of inner strength, engagement, productivity, and performance (Nicholls, Cheung, Lauer & Patashnick, 1989). According to the theory of Self Determination, perceived competence among students is transpired from several dynamics such as social support from teachers and family, a degree of autonomy, and satisfied learning atmosphere (Jeno & Diseth, 2014). It has been claimed that perceived self-competence is measured as a robust predictor of students' motivation (Trouilloud, Sarrazin, Bressoux & Bois, 2006). Perceived competence is demarcated as the psychological need to feel effective and confident within learning fraternity so that students feel or perceive that they are capable of successfully performing within and completing a learning assignment (Ryan & Deci, 2000). Scholars in motivation have attempted to investigate the link between competence and intrinsic motivation among students in secondary and primary schools; however, perceived self-competence among tertiary students is yet to be investigated.

Social Support

Internal and external motivations among students are an outcome of multi-facets, such as perceived social support, rewards, and active participation in class (Ryan & Deci, 2000). Social support is claimed to have a direct effect on students' internal motivation and academic achievement. Furthermore, Cirik (2015) mentioned in his study that multiple sources of social support such as parents, siblings, teachers, and peers significantly affect internal motivation among students; thus, performance is likely to increase.

A growing body of literature also suggests that supportive networks significantly influence students' academic achievement through motivation (Ahmed, Minnaert, Werf & Kuyper, 2010; Wentzel, 1998). Moreover, students' academic motivation is improved where there are supportive interactions between students, teachers, peers, and family (Kiefer, Alley & Ellerbrock, 2015). Nonetheless, the link between social support and students' intrinsic motivation in tertiary education needs to be further tested.

Self-Determination

Self-determination, is a psychological construct, refers to volitional actions taken by people based on their own will, and self-determined behavior comes from intentional, conscious choice, and decision (Nota, Soresi, Ferrari & Wehmeyer, 2010). There have been numerous conceptualizations of self-determination proposed within education and psychology and additional conceptualizations that address personal control and causation that do not use the term self-determination. It is not the purpose of this paper to provide an exhaustive or critical examination of these conceptualizations, but instead, existing conceptualizations are briefly discussed as examples of the conceptualizations of self-determination that have been proposed to date.

Self-determination is defined self-determination as a combination of skills, knowledge, and beliefs that enable a person to engage in goal-directed, self-regulated, autonomous behavior. An understanding of one's strengths and limitations, together with a belief of oneself as capable and competent, are essential to self-determination. When acting based on these skills and attitudes, individuals have more exceptional ability to take control of their lives and assume the role of successful adults in our society (Field, Martin, Miller, Ward & Wehmeyer, 1998)

Self-determined people are individuals who know how to choose-they know what they want and how to get it. From an awareness of personal needs, self-determined individuals choose goals, then doggedly pursue

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them. This involves asserting an individual's presence, making his or her needs known, evaluating progress toward meeting goals, adjusting performance, and creating unique approaches to solve problems (Martin and Marshall, 1995).

The concept of self-determination is a developmental process that takes place across the lifespan of an individual (Wehmeyer, 1995). This process of development and acquisition of the attitudes and abilities leading towards self-determination is what enables them to shape their own lives. These attitudes and abilities emerge through the development and acquisition of these multiple, interrelated component elements of self-determination behavior. These component elements include the following skills: choice making, decision making, problem solving, goal setting and attainment, the skills of independence, risk-taking, and safety, the skills of self-observation, evaluation and reinforcement, self-instruction, and, self-advocacy and leadership skills (positive attributes of efficacy and outcomes expectancy; self-awareness; and self-knowledge).

Learning Environment

Learning environment most frequently defines the social, psychological, or psychosocial environment in which learning and teaching take places such as universities, classroom, library, or any other possible place (Cleveland & Fisher, 2014; Nissim, Weissblueth, Scott-Webber & Amar, 2016).
The teaching material and physical learning environment can have an impact through several mechanisms. Improving environmental conditions may bring substantial gains to student achievements by reducing distractions and missed classes (Mendell & Heath, 2005). According to Mata, Monteiro, and Peixoto (Mata, Monteiro & Peixoto, 2012) the improvement in attitudes is likely to be more significant when taking consideration of different environments, but the main contribution is determined in the class environment Newmann and Wehlage (1993) argued that when students were confronted with real-life learning

experiences and with environments that simulate real-world problems, with their complexity and limitations, students were stimulated to higher order thinking processes and active learning. These environments stimulate students to develop knowledge, but also skills and attitudes that were required to effectively apply the knowledge to new problem situations (Herrington & A. Herrington, 1998).

A study conducted by Nissim, Weissblueth, Webber, and Amar (2016), revealed that over 80% of the respondents reported a high increase in creativity, motivation, ability to get higher grades and engagement in class while studying in the new learning environment.

3.   Methodology

The study adopted a correlational research design in describing the relationship between the studied variables. The sampling frame is based on a list of final year students in various faculties UiTM Puncak Alam Campus, Selangor, Malaysia. A total of 650 sets of questionnaire were distributed to the respective respondents. A total of 621 sets of the questionnaire were returned, recording the return rate of 95.5%. The questionnaire was adapted from the established questionnaire, and the items were modified to get the required responses to the research questions. Predictors of intrinsic motivation measured by using a questionnaire taken from Behavioral Regulation in Exercise Questionnaire-2 (BREQ-2) (Murcia, Gimeno & Camacho, 2007). Meanwhile, Intrinsic motivation measured by using the Motivated Strategies for Learning Questionnaire (MSLQ) (Burdorf & Bruggeling, 1996; Meerding, Ijzelenberg, Koopmanschap, Severens & Burdorf, 2005).

The questionnaire utilized closed-ended questions with a fixed range of possible answers using a 5-point Likert scale with the following values; 1 = strongly disagree, 2 = disagree, 3 = uncertain, 4 = agree, and 5 = strongly agree to measure predictors of intrinsic motivation besides 5-point Likert scale with the following values; 1 = never, 2 = almost never, 3

= sometimes, 4 = fairly often and 5 = very often to measure the level of intrinsic motivation among respondents. The items were modified to get the required response that would answer the research questions. The collected data were analyzed using statistical software, i.e., SPSS Version 23. The study used both descriptive statistics (mean and standard deviation) and inferential statistics (a multiple regression analysis).

4. Findings and Discussion

Profile of Respondents

Describing the participants involved in the study, 234 respondents or 37.7% are male, and 387 respondents' or 62.3% are female. Regarding the participants' educational background, 120 respondents or 19.3% of them were final year students in the Faculty of Pharmacy while 106 or 17% of them were from the Faculty of Health Sciences' students. A total of 135 respondents or 21.7% were final year students on the Faculty of Hotel and Tourism Management, and 130 respondents or 21% of them were from Faculty of Business and Management. The remaining respondents (130 of them or 21%) were final year students in the Faculty of Accountancy.

Table 1: Results of Factor Analysis for the Independent Variables

	Component			
	1	2	3	4
SS-There are people available if I need help	.702			
SS-Have friends and relatives that can help unconditionally	.681			
SS-Opportunity to encourage others to develop interest and skills	.608			
SS-Others let me know they enjoy study with me	.607			

SS-I have people that I share my activities with	.589			
SS-Group of friends help each other	.587			
PC-Important to do better		.682		
PC-Motivated by outperforming peer		.678		
PC-Do well to show to family, friends, and others		.608		
PC-Goal to get a better grade		.602		
PC-Worry about the possibility of getting bad grades		.581		
PC-Explain ideas concisely		.572		
SD- Set goals			.735	
SD-Make plans to achieve goals			.696	
SD-Check progress towards goals			.661	
LE-Class provides an environment for free and open expression				.703
LE-Physical environment is comfortable and accessible				.661
LE-Lecturer makes feel welcomed				.646
% variance explained (48.487)	14.850	14.451	10.420	8.765
MSA				.829-.909
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.				.872

	Approx. Chi-Square		2250.088
Bartlett's Test of Sphericity	df		153
	Sig.		.000

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser

A principal component factor analysis with varimax rotation was performed to confirm the dimensionality of items used to measure factors contributing to internal motivation of students to learn. Initially, there were 47 items used to measure four factors of learning that involve social support (17 items), perceived competence (12 items), self-determination (12 items) and learning environment (6 items).

The results of factor analysis indicate the existence of four factors but with reduced items. Only 18 items were retained. The rest were removed due to high cross-loadings and items loaded under different components that contradict with the original conceptualization. All four factors explain 48.487% of the variance. The KMO value of .872 indicates the suitability of the correlation matrix to proceed with factor analysis. The MSA values are in the range of .829 and .909, indicating the adequacy of samples for each item. The first component consists of six items measuring social support with loadings ranging from .508 to .702. The second component with six items reflects perceived competence having factor loadings from .572 to .682. The third component only contains three items measuring self-determination with factor loadings in the range of .661 to .735. The last component contains three items concerning the learning environment with factor loadings ranging from .646 to 703.

Table 2: Results of Factor Analysis for the Dependent Variable

	Component
	1

IM-I set high goals for me	.812
IM-I still want to go to class even when my friends don't	.810
IM-Do all I can to make assignment perfect	.702
IM-My academic interests are not influenced by anyone	.667
IM-Sign up for a class that prepares me for the future	.666
% variance explained	53.945
MSA	.696-.840
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.761

Bartlett's Test of Sphericity	Approx. Chi-Square	921.083
	df	10
	Sig.	.000

Extraction Method: Principal Component Analysis.

A principal component factor analysis was also performed to determine the dimensionality of a 17-item measure of the internal motivation of students. The results of the analysis indicate the existence of uni-dimensionality of the 5-item measure of internal motivation. A total of 12 items were removed as they formed separate components. The factor explains 53.945% of the variance with KMO value of .761, which indicates the suitability of the correlation matrix to proceed with factor analysis. The MSA values that range from .696 to .840 indicate the adequacy of samples for each item measuring internal motivation. This factor contains loadings from .666 to .812, which is highly acceptable.

Table 3: Results of Correlation Analysis

No	Variables	Mean	SD	1	2	3	4	5
1	Perceived competence	3.83	.62	(.737)				
2	Social support	3.87	.58	.459**	(.750)			

3	Self-determination	3.83	.65	.394**	.396**	(.623)		
4	Learning environment	3.84	.61	.336**	.357**	.301**	(.519)	
5	Internal motivation	3.94	.67	.532**	.507**	.529**	.367**	(.785)

Notes: **. Correlation is significant at the 0.01 level (1-tailed); N=621

Correlation analysis was conducted to determine the convergent and concurrent validity of the constructs. Looking at all four independent variables, they are all moderately correlated with one another indicating convergent validity. Concerning the correlations between the independent and the dependent variables, they are all moderately correlated signifying concurrent validity of the constructs. All variables have high Cronbach's alpha values indicating that the items measuring the intended variables are highly reliable. All variables are also having high mean scores indicating that students perceived highly on all factors that contribute to their internal motivation to learn.

Table 4: Table of Regression Analysis

Variables	Standardized Beta Values
Perceived competence	.275**
Social support	.224**
Self-determination	.301**
Learning environment	.104**
R	.676
R^2	.457
Adjusted R^2	.454
F values	129.776
Sig. F values	.000
Durbin Watson	1.472

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A multiple regression analysis was performed to determine factors that contribute to students' internal motivation to learn. The regression model is highly acceptable with R^2 of .454, that indicates 45.5% of the variance is explained by the independent variables. The F value of 129.776 is significant denoting that the data fit the model very well. Durbin Watson of 1.472 shows the absence of autocorrelation problem in the regression model. Looking at the contribution of independent variables in explaining the students' internal motivation to learn, all four factors are significant at the 0.05 level.

The first significant factor is self-determination or having the ability to set goals. Students who can set learning goals are most likely to have high internal motivation as compared to those without specific learning goals. Using the SMART approach in setting goals is good enough to start with. Therefore, lecturers are advised to make sure that their students can set the learning goals at the beginning of the semester and frequently remind them of their established goals. The goals must be revised to align with the level of competencies of the students. It is meant to ensure that the established goals are challenging enough for them to exert their optimum potentials.

The second significant factor is perceived competence or better known as self-efficacy. Students should be equipped with high self-efficacy so that they will have high internal motivation to learn. To increase the levels of self-efficacy, academics need to focus on its main aspects involving mastery experience, vicarious experience, social persuasion, and psychological arousal. Learning through experience, learning through others, getting frequent and continuous feedback on their performance and having the right emotions and feelings towards learning are among other activities that can be emphasized by academics to ensure that students have high perceived competence or self-efficacy.

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The third factor that is significant to influence internal motivation is social support. Students need social support or continuous encouragement from individuals around them, such as their friends, lecturers, supervisors, and their family members so that they will have high internal motivation to learn. As teenagers, students' ability to focus on their study can be easily diverted by other more interesting activities like hanging around with friends, pursuing their hobbies and likes. It is important for them to have someone who can always encourage them to keep on focusing on their study. Some arrangement like a study group, group assignment, or project, and other group activities should be used to build up social support networks among students.

The last significant factor that influences students' internal motivation to learn is learning environment. The learning environment includes classroom, library, students' lounge, hostels, and other facilities that promote learning among students. The facilities must be comfortable, have a modern look, are user-friendly and convenient for students to use. To produce first class graduates, the university must provide world-class learning facilities. The provision of conducive learning environment will heighten the levels motivation to learn among students as it stimulates the inner strength or the energy to pursue their divine course of actions and to persevere until their established goals are successfully achieved.

5. Conclusion and Implications

High dropout rates among university students have triggered this study to be conducted. This phenomenon is believed to be contributed by the low internal motivation of students to learn. Four factors were identified based on the relevant literature review, which comprises social support, perceived competence, self-determination, and learning environment. The results of the study indicate that all four factors are the significant factors that lead to students' internal motivation to learn.
All individuals involved in educating students should play an active role in assisting them to succeed in their academic endeavors. Below are some

recommendations that can be used as guidelines by students and lecturers to improve the levels of internal motivation of students to learn:

1.   Set challenging goals using the SMART approach. Lecturers and students must work collaboratively to set learning goals and identify appropriate actions to achieve those goals.

2.   Equip students with high levels of self-efficacy. This objective can be achieved through a continuous effort by focusing on four important dimensions that comprise mastery experience, vicarious experience, social persuasion, and psychological arousal. Mastery experience can be developed through students' involvement in learning activities such as performing challenging tasks, solving complicated problems, and others. Vicarious experience can be improved by learning through others' experience such as working in a group, getting experts' help, and involving in the discussion. Social persuasion can be achieved by getting constructive feedback on current performance so that corrective actions can be taken to overcome weaknesses. Psychological arousal can be developed by correctly perceiving, understanding, regulating, and using emotions to facilitate thoughts, which are the four branches of emotional intelligence competency.

3.   Encourage students to their best. Important individuals, including peers, lecturers, supervisors, family members should provide continuous advice and encouragement to students to keep on focusing on learning so that their priorities remain unchanged.

4.   Provide the right learning environment. An appropriate learning environment that includes facilities and ambiance will help keep students' motivation high. The administrators must ensure that all required learning

facilities are provided and properly maintained so that they are always available when students want to use them.

6. Suggestions for future research

This present study was conducted in UiTM Puncak Alam involving undergraduate students from four different faculties. Therefore, the generalization of the findings is limited. Replication of the study is required, involving a more significant number of faculties and universities. Secondly, the factors involved in this study are limited to the four most researched factors. Future studies should incorporate other factors that are also important such as learning and teaching styles, learning strategies, and others so that the study becomes more comprehensive. Thirdly, the use of a qualitative approach is encouraged as the initial step in identifying factors relevant to students' internal motivation to learn. This is because the different settings might have distinct factors that contribute to students' internal motivation to learn. Lastly, using specific interventions such as teaching and learning strategies might produce more concrete evidence on the effectiveness of specific approaches to increase motivation. Therefore, the use of longitudinal study is encouraged to see the real effect of specific interventions.

7. References

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Revista Publicando, 6 (19). 2019, 40-61. ISSN 1390-9304

Enero-marzo, 2019

A. Bandura (1997) Self-efficacy: The exercise of control, New York: Freeman.

A. Burdorf and T. Bruggeling (1996). Reliability of a questionnaire on sickness absence with specific attention to absence due to back pain and respiratory complaints. *Occupational and Environmental Medicine*, 53, (1), 58-62.

A. Wigfield and J. Cambria, J. (2010). Students' achievement values, goal orientations, and interest: Definitions, development, and relations to achievement outcomes. *Developmental Review*, 30, (1), 1-35.

B. Cleveland and K. Fisher (2014) The evaluation of physical learning environments: A critical review of the literature. *Learning Environments Research*, 17, (1), 1-28.

C. Brewster and F. Fager J. (2000). Increasing student engagement and motivation: From time-on-task to homework. Portland, Oregon: Northwest Regional Educational Laboratory.

D. Coon and J. O. Mitterer (2012). Introduction to psychology: Gateways to mind and behavior with concept maps and reviews. Cengage Learning.

D. Maclntyre, K. MacMaster and S. C. Baker (2001). The convergence of multiple models of motivation for second language learning: Gardner, Pintrich, Kuhl, and McCroskey, In *Motivation and second language acquisition (Technical Report #23)*, Edited Z. Domyei and R. Schmidt. Honolulu: Second Language Teaching and Curriculum Center, University of Hawai, pp. 461-492.

D. Trouilloud, P. Sarrazin, P. Bressoux and J. Bois (2006). Relation between teachers' early expectations and students' later perceived competence in physical education classes: Autonomy-supportive climate as a moderator. *Journal of educational psychology*, 98, (1), 75-86.

E. L. Deci and R. M. Ryan (1985). The general causality orientations scale: Self-determination in personality. *Journal of Research in Personality*, 19, (2), 109-134.

E. L. Deci and R. M. Ryan (2002) Self-determination research: reflections and future directions, In Handbook on self-determination research, Edited E.L. Deci and R.M. Ryan. Rochester, New York: University of Rochester Press, pp. 431-441.

E. Tezci, F. Sezer, U. Gurgan, and S. Aktan (2015). A Study on Social Support and Motivation. *Anthropologist*, 22, (2), 284-292.

F. M. Newmann and G. G. Wehlage (1993). Five standards for authentic instruction. *Educational Leadership*, 50, (7), 8-12.

H. A. Tharbe (2006). Coping with Stress: Are Our Students Proactive? *Masalah Pendidikan*, (29), 57-66.

I. Cirik (2015). Relationships between Social Support, Motivation, and Science Achievement: Structural Equation Modeling. *Anthropologist*, 20, (1-2), 232-242.

J. A. M. Murcia, E. C. Gimeno, and A. M. Camacho (2007). Measuring self-determination motivation in a physical fitness setting: validation of the Behavioral Regulation in Exercise Questionnaire-2 (BREQ-2) in a Spanish sample. *Journal of Sports Medicine and Physical Fitness*, 47, (3), 366.

J. E. Martin and L. H. Marshall (1995). Choice Maker: A comprehensive self-determination transition program. *Intervention in School and Clinic,* (309), 147-156.

Predictors of Intrinsic Motivation among University Students: An Application of Expectancy-Value Theory
Revista Publicando, 6 (19). 2019, 40-61. ISSN 1390-9304

Enero-marzo, 2019

J. Eccles (1983). Expectancies, values and academic behaviors, In Achievement and achievement motives, Edited J. T. Spence. San Francisco: Freeman, pp. 75-146.

J. G. Nicholls, P. C. Cheung, J. Lauer, and M. Patashnick (1989) Individual differences in academic motivation: Perceived ability, goals, beliefs, and values. *Learning and individual differences*, 1 (1), 63-84.

J. Herrington and A. Herrington (1998). Authentic assessment and multimedia: How university students respond to a model of authentic assessment. *Higher Education Research & Development*, 17, (3), 305-322.

K. A. D'souza and S. Maheshwari (2015). A Methodological Approach for Studying Public Bus Transit Driver Distraction. *International Journal of Sustainable Development and Planning*. 10, (2), 229-244.

K. J. Pugh and D. A. Bergin (2006) Motivational influences on transfer. *Educational Researcher*. (41), 147–160.

K. R. Wentzel (1998). Social relationships and motivation in middle school: The role of parents, teachers, and peers. *Journal of Educational Psychology*, 90, (2), 202-209.

L. G. Pelletier, S. F. Michelle, R. J. Vallerand, and M. B. Nathalie (2001). Associations among perceived autonomy support, forms of self-regulation, and persistence: A prospective study. *Motivation and Emotion*. 25, (4), pp. 279-306.

L. M. Jeno and A. Diseth (2014). A self-determination theory perspective on autonomy support, autonomous self-regulation, and perceived school performance, *Reflecting Education*, 9, (1), 1-20.

Predictors of Intrinsic Motivation among University Students: An Application of Expectancy-Value Theory
Revista Publicando, 6 (19). 2019, 40-61. ISSN 1390-9304

Enero-marzo, 2019

L. Nota, S. Soresi, L. Ferrari and M. L. Wehmeyer (2010). A Multivariate Analysis of the Self-Determination of Adolescents. *Journal of Happiness Studies*, 12, (2), 245-266.

M. D. L. Mata V. Monteiro and F. Peixoto (2012). Attitudes towards mathematics: Effects of individual, motivational, and social support factors. Child development research.

M. J. Mendell and G. A. Heath (2005). Do indoor pollutants and thermal conditions in schools influence student performance? A critical review of the literature. *Indoor Air,* 15, (1), 27-52.

M. Wehmeyer (1995). A Career Education Approach: Self-Determination for Youth with Mild Cognitive Disabilities. *Intervention in School and Clinic*, (30), 157-63.

N. Vernadakis, O. Kouli, O., E. Tsitskari, A. Gioftsidou, and P. Antoniou (2014). University students' ability-expectancy beliefs and subjective task values for exergames, *Computers & Education*, (75), 149-161.

P. R. Pintrich and D. H. Schunk (2002) Motivation in education: Theory. Research, and Applications, Second Edition. Ohio: Ohio Merrill Prentice Hall, Columbus.

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

R. M. Ryan and J. Stiller (1991). The social contexts of internalization: Parent and teacher influences on autonomy, motivation, and learning, In Advances in motivation and achievement, Edited P. R. Pintrich and M. L. Maehr. Greenwich, CT: JAI Press, pp. 115–149.

S. Field, J. Martin, R. Miller, M. Ward, and M. Wehmeyer (1998). A practical guide for teaching self-determination. Virginia: Council for Exceptional Children.

S. M. Kiefer, K. M. Alley and C. R. Ellerbrock (2015). Teacher and peer support for young adolescents' motivation, engagement, and school belonging. *RMLE Online*, 38, (8), 1-18.

W. Ahmed, A. Minnaert, G. van der Werf, and H. Kuyper (2010). Perceived social support and early adolescents' achievement: The mediational roles of motivational beliefs and emotions. *Journal of Youth and Adolescence*, 39, (1), 36-46.

W. J. Meerding W. Ijzelenberg M.A. Koopmanschap J.L. Severens and A. Burdorf (2005). Health problems lead to considerable productivity loss at work among workers with high physical load jobs. *Journal of Clinical Epidemiology*, (58), 517–523.

Y. Nissim, E. Weissblueth, L. Scott-Webber, and S. Amar (2016) The effect of a stimulating learning environment on pre-service Teachers' Motivation and 21st Century Skills. *Journal of education and learning*, 5, (3), 29-39.