

ANALYSIS AND STRATEGY FOR UNDERGRADUATES EDUCATION IN CHINESE LOCAL UNIVERSITY: FROM AN INVESTIGATION OF STUDY ENGAGEMENT

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Abstract

This paper focused on the study engagement of undergraduates from a local university in China. By the use of the revised study engagement scale of 14 items, 540 undergraduates were served as participants in our investigation and 527 effective questionnaires were recycled. The analyzed results showed that the average study engagement of current university students had fallen in the level under medium and there existed significant difference in gender, grade and the will of the major choice. The internal consistency estimate of three dimensions (vigor, dedication and focus) by using the Cronbach coefficient varied from 0.75 to 0.89 and the overall internal consistency estimate of the scale was 0.91. Finally based on the derived results, some practical measures and suggestions were proposed to enhance the study engagement for students of local universities.

Keywords: Study engagement; Local university; Vigor; Dedication; Focus

Introduction

As the main content of active psychology, the concept of study engagement originated from the work engagement research. The early work engagement mainly concentrated in the service professions such as education, police, nurse, social service providers and so on (Schaufeli, Salanova et.al, 2002, Schaufeli, Martinez et.al. 2002). With the unceasing developments in research of work engagement, some scholars started to integrate students into the research target which eventually contributed to the formation for the concept of study engagement. Although at present the concept of study engagement has been employed in some researches, however, the uniformed definition has not been made yet even if it is similar to that of work engagement.

A lot of scholars regarded the study engagement as one kind of the positive, substantial state of the mind, which comes from several psychological and physical aspects of an individual, for example, the vigor, the dedication and the focus as Schaufeli and Bakker had claimed (Schaufeli & Bakker, 2003). The vigor is referred to the outstanding energy and toughness in study and the will to pay for the difficulty when persisting in study; The dedication is referred to the individual's intense feeling, the sense of pride as well as the full enthusiasm for study or the ability of involvement into the process of study; The focus means a total concentration on studies or the experience to the joyful feeling. Some scholars also believed that the study engagement is relative to the time and the energy for which the students paid in the educational activities, and endeavor for which students paid in the control effective education practices (Kuh, Kinzie et.al 2006). Fredricks et. al, on the other hand, thought that the study engagement includes an individual's three dimensions of behavior, mood and cognition (Fredricks, Blumenfeld & Paris, 2004). The behavior engagement means the individual participation involved in activities at the school period, no matter about studies or non-studies; The mood engagement refers to the positive emotion and the sense of belonging when faced to the studies duty or other people (e.g. teachers or schoolmates); The cognition engagement is one kind of training of thoughts including the application of cognition strategies and the psychological resources in studies. Based on the above developed three dimensions, Fredricks et.al. further

comprehensively analyzed two kinds of influence factors for study engagement. The first is about the individual variable, including population statistics variable (such as the gender, race, household income and so on) and individual characteristic variable (such as the tiredness, specialized pledge and so on); The second is relative to the environment variable, including those from family and school (Fredricks , Blumenfeld & Paris, 2004).

According to different dimensions of an individual, various of scales can be constructed to measure the study engagement. One of the most widely applied is the Utrecht Work Engagement Scale – Student (UWES-S), developed by Schaufeli et.al for the measurement of students in study engagement based on their earlier work “Utrecht work engagement scale” (UWES). Although the Cronbach coefficients of the three dimensions (vigor, dedication and focus) were 0.63, 0.81 and 0.72 respectively, which implied the good validity of such a method, UWES-S still had to face different cases as unbalanced educational levels in various countries.

Compared with the popular empirical researches on study engagement, scholars in China so far more preferred stressing the introduction of research results from counties of advanced educational levels, or localizing the existed oversea scales. For example, the UWES-S was translated in Chinese and directly used to measure the study engagement of 79 undergraduates and 188 graduate students early in 2008 (Fang & Shi, 2008); Some revisions were also made to UWES-S to meet the Chinese students, but its effectiveness had not been examined in practices (Li and Huang, 2010). Although some investigations about study engagement of students have been made at present schools in China (Liao 2011) and several kinds of questionnaires have been devised (Shu et.al., 2011), the overall researches are still few especially for the university students. To rich the empirical researches on this topic and provide more reference data, this paper aims at investigating the study engagement of the current local university students via the devised questionnaires.

On the other hand with the rapid popularity of the higher education in China, the quality has become a vital issue that people most concerned about. The study engagement is not only the actual process into which students put their energy and the time, but also the exact reflection of their state of mind in learning. In this sense, it is the crux to improve the higher education quality by paying more attention to the university students' real conditions and raising the consciousness of increasing study engagement by themselves. Therefore, the research at this point on study engagement of local university students is of great value.

Research Methodology

Research objects

Undergraduates in six majors including Information and Computation, Applied Mathematics, Electric Engineering, Journalism and Communication, Art Design, Market Management in Hunan University of Technology (Hunan Province, China) are investigated. We provided 602 questionnaires in which 540 are recycled and the effective questionnaires are 527. The ratio of effective return reaches about 87. 5%. Table 1 lists the basic information of the surveyed undergraduates.

Table 1

Basic information of the undergraduates

		Number	Ratio(%)
Gender	Male	236	44.8%

	Female	291	55.2%
Major	Liberal Arts	272	51.6%
	Science and Engineering	255	48.4%
	Freshman	156	29.6%
Grade	Sophomore	134	25.4%
	Junior	127	24.1%
	Senior	110	20.9%
Order of Desired Major at Admission	1	349	66.2%
	2	90	17.1%
	3	88	16.7%

Note. In Order of Desired Major, "1" represents the most desired major; "2" stands for the secondary desired major; "3" is the undesired major.

Study tool

The UWES-S is employed in our research had been made some revisions based on Chinese students characteristics. The scale involves three dimensions: the vigor, the dedication and the focus. Specifically, the vigor dimension has 6 sub-projects, the dedication dimension possesses 5 and the focus dimension includes 6 sub-projects. As we have mentioned above, to comply with the Chinese conventional thoughts and the language culture, part of contents in UWES-S was revised and complemented to ensure some topics to be more accurate and succinct. For example, Some items such as "My heart was only full of study when I learn", "I was immersed completely in the study" were erased and, some like "I will compare my methods to learn with other's" were added. Finally, the constructed study engagement scale is comprised of 15 sub-projects in total of three dimensions. The investigated participants was requested to mark from "5- fits very well" to "1- does not fit at all" to carry on such an investigation.

Data processing

The questionnaires were distributed to students and recycled on the spot by the investigators. At the same time, the researcher gave students some interpretations on the instructions and terminologies which ensured the secrecy and the technicality of the questionnaires. The obtained research data were input SPSS17.0 to carry on relative statistical analysis. At last 6 undergraduates were selected to make an interview for the rationality of the investigation.

Results Analysis and Discussion

Factor analysis of students study engagement

We first carried out the factor analysis to the derived questionnaires. In terms of standardized regression coefficients and the revised index of various projects in different factors, one sub-project was deleted and the rest 14 items were retained. The vigor factor includes 4 sub-projects and both dedication factor and the focus factor still remain 5. The factor loading in each is above 0.43 and the structure fitting index: $X^2/df = 1.32$ which is less than 3. This implies the model fits the data well (see Table 2 for details) and this questionnaire has the good validity.

Table 2

Factor analysis of university students study engagement

X^2	df	X^2/df	GFI	IFI	TLI	CFI	RMSEA

79.2	60	1.32	0.88	0.93	0.92	0.92	0.062
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Reliability and validity

Reliability analysis. To justify the reliability of the devised questionnaire, we made use of Chronbach coefficient to test the internal consistency of all factors. The coefficients of three dimensions (vigor, dedication and focus) were 0.785, 0.886 and 0.748, respectively, and the overall Chronbach coefficient is 0.907. Thus the reliability of this investigation is high (The reliability is acceptable in general when the coefficient is ranged from 0.65 to 0.7, good for above 0.7 and excellent for above 0.8).

Validity analysis. The use of the UWS-S scale has been tested valid as it succeeded in many western advanced universities (Johnson, Crosnoe & Elder, 2001). Although we had made some revisions in our case to the original UWS-S scale, the validity can still be guaranteed as the revised one had been approved by some psychological and pedagogical professors and taken some advices from the interviewed students. All these can processes can ensure the accuracy of the questionnaire to a certain extent and reflect the real connotation of university students' study engagement. On the other hand, we have carried on the structure validity examination to test the correlation among all factors. The derived results showed that the correlation coefficients between each two is from 0.63-0.73 which means they possess the positive correlation and various factors cannot be substituted mutually.

Empirical analysis to the status quo of study engagement

Overall results. The general descriptive statistics results were given in Table 3. We can see from the average score for each item is 2.46, slightly less than the critical value 3. Moreover, the order of different dimensions can be put in line from high to low as follows: vigor, dedication, focus. In general, the study engagement in university students falls in lower-middle level and the study focus is the worst.

Table 3

Descriptive statistical results of study engagement

	Number of items	Average score	Average score for each item
Vigor	4	11.6	2.90
Dedication	5	12.8	2.56
Focus	5	10.1	2.02
Total	14	34.5	2.46

Analysis of differences in study engagement---gender. As shown in Table 4, there is a significant difference in study engagement between the male and female students since $p < 0.01$. As the dimensions of vigor, dedication and focus are concerned, the score of male students are higher than that of female students. Such a conclusion about undergraduates in local university seems some different with the formal ones (Liao 2011, Zhang, Bian & Xu, 2008) but similar to that drew by Cui (Cui, 2012). We have also noted that some scholars found that the gender gave no effects on study engagement (Ni and Wu, 2011). Therefore, the influence of gender on engagement deserves to be further investigated in future.

Table 4

Results of study engagement on gender

	Vigor	Dedication	Focus	Study engagement
	M ± SD	M ± SD	M ± SD	M ± SD
Male	14.0 ± 2.56	13.31 ± 3.83	10.06 ± 2.87	37.40 ± 9.30
Female	12.1 ± 2.24	12.87 ± 3.32	9.72 ± 2.41	34.71 ± 7.98
F-value	4.10 **	3.96 **	3.73 **	4.61 **

Note. "M" is the mean and "SD" is the standard deviation. The symbol "*" stands for $p < 0.05$ and "***" means $p < 0.01$.

Analysis of differences in study engagement---grade. Table 5 shows that there also exist significant differences in vigor, dedication and focus among students from different grade as $p < 0.001$. We further actually discovered that, after a T-test, freshmen and sophomores were much superior to juniors and seniors in terms of study vigor and focus. The reason of such a phenomenon is possibly that the new-enrolled undergraduates still follow the learning pattern in the high school and prefer to pay more attention to the gain of knowledge. For junior and senior students, however, they undergo several years of university life and are easier to be tired for study. Moreover, many of them have to lay the concentration on looking for practical jobs in social as the approaching graduation. Therefore, the performances in study engagement of higher grade undergraduates are poorer than those of lower grade students.

Table 5*Results of study engagement on different grade*

	Vigor	Dedication	Focus	Study engagement
	M ± SD	M ± SD	M ± SD	M ± SD
Freshman	13.02 ± 2.82	14.31 ± 3.35	10.01 ± 2.71	37.34 ± 7.99
Sophomore	12.83 ± 2.64	13.62 ± 3.62	9.83 ± 2.62	36.28 ± 7.48
Junior	12.45 ± 2.71	13.29 ± 3.73	9.35 ± 2.93	35.09 ± 7.63
Senior	12.03 ± 2.62	13.02 ± 3.81	9.51 ± 2.24	34.56 ± 7.52
F-value	4.24 **	1.68	4.11 **	3.89 **

Note. "M" is the mean and "SD" is the standard deviation. The symbol "*" stands for $p < 0.05$ and "***" means $p < 0.01$.

Analysis of differences in study engagement---different major. As shown in Table 6, the overall level has no remarkable differences in study engagement of undergraduates from various majors and, so does it in each dimension performance. It is possible that the dissimilarity of majors is not the essential reason to be able to give influence on study engagement and, each student's preference to the specialized major is varied for different growing stages. In addition, it is also possible that the chosen majors in investigation are too rough to reflect the implied relations between study engagement and major. If the representative majors are selected, the dissimilar conclusion may be drawn. We will further follow such a topic research in future. Information and Computation, Applied Mathematics, Electric Engineering, Journalism and Communication, Art Design, Market Management

Table 6*Results of study engagement on different majors*

	Vigor	Dedication	Focus	Engagement
	M ± SD	M ± SD	M ± SD	M ± SD

Information and Computation	11.85 ± 2.64	13.85 ± 3.42	10.04 ± 2.74	35.75 ± 7.53
Applied Mathematics	10.34 ± 2.64	13.63 ± 3.71	10.10 ± 2.42	34.10 ± 7.84
Electric Engineering	10.82 ± 2.73	12.97 ± 3.27	9.42 ± 2.37	33.21 ± 7.25
Journalism and Communication	12.21 ± 2.73	13.03 ± 3.83	9.25 ± 2.53	34.50 ± 7.30
Art Design	11.51 ± 2.23	12.17 ± 3.06	9.13 ± 2.02	33.00 ± 7.05
Market Management	12.43 ± 3.01	12.98 ± 3.14	9.24 ± 2.69	34.65 ± 7.86
t-value	1.02	-0.55	-0.67	-0.08

Analysis of differences in study engagement---choice of major. It can be seen from the Table 7 that the university students with the most desired major at admission hold higher study engagement than those with secondary desired major as well as undesired major. This is because students who are fond of their majors are more glad to strength the specialized interests and pour out their study enthusiasm. For major-undesired ones however, they are passively driven by the external power such as the exams and graduations rather than the interest and the passion. Therefore their study engagement is relatively low.

Table 7

Results of study engagement on different major will

	Vigor	Dedication	Focus	Study engagement
	M ± SD	M ± SD	M ± SD	M ± SD
Most desired	12.55 ± 2.74	13.14 ± 3.61	10.24 ± 2.56	35.94 ± 7.12
Secondary desired	12.10 ± 2.61	12.45 ± 3.76	9.42 ± 2.63	33.97 ± 6.83
Undesired	11.81 ± 2.55	12.03 ± 3.50	9.14 ± 2.55	32.99 ± 7.01
F-value	32.61**	35.03**	29.21**	39.85**

Note. "M" is the mean and "SD" is the standard deviation. The symbol "*" stands for $p < 0.05$ and "***" means $p < 0.01$.

Conclusion and suggestion

Research conclusion

- The overall study engagement of undergraduates in the local university in China has fallen into a lower-middle level and the three dimensions are ordered from high to low in turn is the dedication, the vigor and the focus.
- There exists significant difference in the gender factor. Specifically, male university students get higher scores than female students on three dimensions (i.e. the vigor, the dedication and the focus) in learning activities.
- The performances of undergraduates' study engagement from different grades can be summarized as follows. Students from low grades have more studying passions than ones from high grades. Especially, freshmen and sophomores beat juniors and seniors in study engagement on dimensions of vigor and focus.
- It can be seen at least from our investigation, there is no significant difference in students' study engagement as different majors are concerned.
- The enrollment of the desired major at admission has great influences on students' study engagement. Basically, the overall level as well as the concrete dimension (vigor, dedication and

focus) of ones whose wills are satisfied are of higher scores than those whose wills are not satisfied.

Research suggestions

The study engagement is the reflection of a student's spirit and state and, it plays a vital role in his development in future study and work. The obtained research results indicate that the current students' study engagement of local university in China is not optimistic. Therefore, it is urgent to take some powerful measures to strengthen the undergraduates' engagement and enhance their study efficiency. According to the above investigation results, several well-directed suggestions can be put forward on each difference of study engagement.

Suggestions aimed at gender difference.

- Instructors may satisfy to female students' study anticipations as far as possible and give them encouragements and positive supports every now and then. On the other hand, the relationship between instructors and students will definitely have an affect on students' study engagement. Hence, suitable encouragements and proper anticipations from instructors are advantageous to strengthen female students' self-potency and enhance their confidences in study activities .
- Instructors may also learn to be adept stimulating female students' internal study motivation. As a saying goes, the interest is one of the best teachers for students. So how to increase the study interest is a crux to improve the study quality. Nevertheless, the raise of the study interest in universities is mainly due to the instructor's patient guidance and the university's environmental supports. Thus instructors should be diligent to improve their teaching ability in the classroom and the university should be efficient to utilize the existing teaching resources.
- As the female students themselves are concerned, they have to overcome the conventional social traditions existed for a long-time in China and dare to attempt some challenges in study. At the same time, the female students should realize the importance of study in future work and develop stronger ability to accept setbacks in studies.
- When aimed at enhancing the study engagement, the female students have to culture a ability in self-adjustment of the mood. It is natural that the female students usually inhere the delicate emotion which make them more sensitive and unstable in coping with problems in study or life. Therefore, several approaches such as the self-suggestion method, the music adjustment method could be exploited to ensure their focus in learning.

Suggestions aimed at the grade difference

- Students from higher grades should pay more attention to their own physical quality and be more active in participating physical exercises. The healthy body in general is one of most important physiological foundations which can produce the positive mood. Physical training in proper frequencies can guarantee the abundant strength in one's body and is also advantageous to stimulate the vigor in learning process. Meanwhile in the course of physical exercises, the willpower has been enhanced which in turn is helpful to the persistence in study.
- The university should build a good environment for students both from the hardware and the software aspects. The learning environment is a vital factor to affect the study engagement especially for undergraduates without strong self-control ability. The university may, on one hand, improve the hardware conditions via increasing the seats in the library or adjusting the temperature of the classroom to a warm degree in cold days. On the other hand, the university may strengthen the software aspects via setting up a good study atmosphere, building a strong study culture or paying great attention to the learning guidance in students' apartments.
- Instructors also should concentrate on maintaining and stimulating interests and motivations of high grade students. Many juniors and seniors have already been adapted to the university life and accustomed to skip classes that they are not fond of. Part of the reason is that students can not figure out the content of courses they want to learn and thus lost their interests to some extent. Therefore,

instructors have to make full use of all kinds of approaches to improve the quality of class-teaching so that the high grade students could be brought back.

- Apart from passing on knowledge, the university must be imposed another educational function for undergraduates, i.e. psychological health. It has been indicated by many researches that the healthy personality is helpful to the enhancement of study engagement. So the education of psychological health is very important especial for high grade students, since what they will face is to integrate themselves into the whole social after graduation. Staffs and instructors in university have the responsibility to conduct some professional guidance to high grade students about their forthcoming problems on future employment and social life and , help them to relieve the pressure correctly and turn in into the power to proceed rather than leave them alone with wallowing in degeneration.
- High grade students themselves also have to be conscious to exercise their own willpower. They should take full cognizance of that good willpower is not only advantageous to the current study but vital for work in the future. Some good approaches may be adopted including the physical training, the self-suggestion as well as others' surveillance.

Suggestions aimed at the choice of majors

- Instructors should strengthen the guidance and the stimulation to students' interests. One way is to conduct kinds of study activities to let students themselves discover the clew to interests and encourage them to insist on keeping these interests.
- The university should appropriately increase the proportion of allowing undergraduates to transfer their original majors to ones they are interested in. In our interview of students, many of them talked about it was the strict conditions that prevented them to transferred to another branch. Therefore, it is more practical for local university to implement the recruitments of students with no concrete majors at the admission. Once students have their own understanding to each major after some time of learning, they are able to choose the interested major according to their own conditions.
- The university should strength the undergraduates' comprehension to each major. Many major-transferred students repel study as they have thought that the interests can not be fostered in the disliked major. To enhance the study engagement of such students, it is necessary to give some introductions to their current major and develop some activities to let them have opportunities to exchange some ideas to professional instructors. In this way, students may have a fully understanding about what will learn and thus will not be reluctant to increase the study engagement. On the other hand, they can also foresee what they will do after graduations.

Limitation of the research

- The representative research samples are insufficient. What we have chosen are undergraduates from six various majors in a local university in China. The size of sampling is relatively small and the drawn conclusions are of unavoidable limitations to some extent. Therefore, the topic on study engagement should deserve further discussions and deeper researches.
- The analyzing and mining of the obtained data may be insufficient due to the limited statistical knowledge of the authors. In addition, there are a lot complicated and uncontrollable factors in the related interviews and investigations, which may result in the dada are not the complete and the real reflection to the practical case. Therefore how to dig the useful data and delete the abnormal ones are research line to explore in depth.
- There also exists some limitations on the proposed suggestions. This is because the proposals are only based on the investigation of questionnaires and interviews with some undergraduates. Although it is well targeted, the completeness and the authority are of deficiency in some degree.

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