Explore The Impact of Standardized Testing on Students' Learning Potential in Higher Education

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Abstract. Under the background of the expansion of the global higher education scale and the prominent crisis of the decline of higher education quality, the standard of higher education quality evaluation has gradually shifted from focusing on external hardware conditions and the number of resources to focusing on the guarantee of internal quality. As one of the important subjects of higher education, the multiplication effect of students' learning and development has gradually become an important reference basis for the quality evaluation of higher education. Both the United States and China have strict education policies, mainly reflected in academic testing, and test results as a measure of the quality level of education received by students. For students, standardized tests help to measure and evaluate their learning, help them identify the weak links in learning, and also force students to focus on the test results to a certain extent. Through literature review and deductive induction, this paper will analyze the impact of standardized tests on students' learning potential in higher education, and carry out relevant discussions to provide meaningful suggestions for higher education researchers.

Keywords: standardized test; higher education; learning potential.

1 Introduction

Standardized testing is an important indicator of educational equity in higher education. With the popularization of higher education and the increasing internationalization of higher education today, the higher education mode and educational equity policy have a great impact on students' learning potential. Learning potential is the potential learning possibility that students have not yet shown in the learning process, as opposed to realistic learning ability. Through their efforts or teachers' guidance, students can make it into real learning ability. Academic evaluation refers to the school's evaluation of students' mastery of knowledge in a certain period, which can reflect the objective evaluation. This research will explore the impact of academic evaluation results on students' learning potential according to the mode and frequency of academic evaluation.

Starting from the impact of standardized testing on students' learning potential in higher education, this paper studies the cultivation efficiency of education policies and educational equity on students and talents in higher education. A representative sample

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of students and teachers of different education levels was recruited through a mixed method (combining quantitative and qualitative methods) to explore the role of standardized testing in assessing students' abilities and knowledge. Qualitative research was carried out with representative samples of educators or teachers with different education levels to explore the influence of standardized testing on their teaching styles and teaching strategies, to provide better teaching ideas and methods for higher education practitioners, stimulate students' learning potential to the greatest extent, improve the quality and level of higher education, and promote social development and progress. This study can help improve students' learning potential by emphasizing that standardized testing focuses on guiding students to focus on specific learning goals rather than focusing too much on achievement goals. It can also enrich the research results of the impact of standardized testing on students' learning potential in higher education at home and abroad and provide a reference for subsequent relevant research. In addition, the investigation and empirical analysis from the perspective of students can arouse the attention of the academic circle, college teachers, and administrators to the design of higher education teaching policies and the improvement of students' learning potential.

2 Literature Review

2.1 Forms of standardized testing in higher education

Hurwitz et al. examined the postsecondary consequences of Maine's policy that all public school juniors should take SAT exams[6]. They assessed 3,500 students who have participated in SAT and other related exams by using student-level data from different public universities and colleges across the United States of America. Their findings indicated that SAT takers increased by 435 once made mandatory in 2007 and 2008. They affirmed that the mandatory SAT policy in Maine increased 4-year college-going rates by 2- to 3 percentage points overall and by 10 percentage points among those students who took the SAT only.

Wai et al.researched the role of standardized testing in measuring the cognitive abilities of universities and colleges across the United States of America and the role the variants play in educational research. Through an internet search, they accessed admission information of 1339 higher learning institutes in the USA and analyzed them through a descriptive statistics method. Wai et al.examined the data collected from the sample size by finding SAT averages between the schools included in the sample size. Wai et al. then compared the institution's ranking within the United States of America. The comparison indicated that schools with high SAT averages ranked higher. The ranking criteria allowed Wai et al. to conclude that students who pass high-stakes tests have a better cognitive ability which helps them obtain better occupations and pay in the future[13].

Holt-Bocksnick undertook an exploratory case study research method to identify students' perceptions about teachers' implemented strategies to reduce standard testing exam-related stress[5]. The study considered the students' and teachers' focus and strategies related to standardized test exams. They concluded that teachers applied testing strategies that reduced exam anxiety. Students appreciated using embodiment strategies

such as extrinsic and extrinsic motivation practices by teachers to help reduce everyday testing-related stress. The significant limitation of the research is that it was done on a small sample size. The study is valid since it has applied a reliable research method and data analysis.

Through a survey and quantitative research, Ozdere sought to find the reasons and determinants for the increasing demand for private tutors in Turkey. 46.8 % of the respondents acknowledged having received private tutoring, and 52.8% denied having received private tutoring. Among the reasons for receiving private tutoring, 60.4 % of the students reported preparing for the high-stakes exam and wished to score better grades. Exam-focused learning increased private tutoring demand due to using a high-stakes testing system for university enrolment, leading to better exam outcomes. However, the data was based on student self-reports.

Leeds aimed at an empirical assessment of the significance of admission policies and test preparation on SAT scores. Leeds used the mean and standard deviation to analyze the generated SAT scores[9]. Students' ability and socio-economic status were crucial for high SAT scores. Students with great ability and background were likely to pass SAT exam within the first or second sitting. Students with low ability from poor backgrounds were likely to fail in the first SAT exam sitting and attract more financial constraints in the next SAT exam retakes. Thus, SAT college admission policies create a college entry barrier for low-income students with low academic achievements.

Gamez analyzed the effects of high-stake scores on students' academic success[3]. In the study, Gamez conducted experimental research in 50 American states and collected data by observation analyzed through regression analysis. From the data analysis, Gamez found that low rates of graduation from high school were related to standardized testing. He concluded that expanding standardized testing will result in lower graduation rates.

Pires conducted qualitative research to assess Gaokao's impact on Chinese students. Purposive sampling and literature review were adopted during the study and interviews were conducted with 20 Portuguese students at Sun-Yat Sen University in Guandong Province[8]. Students conceded that Gaokao is a significant cause of stress, and some even contemplate suicide at some point while others commit suicide. Regardless of the negative side associated with gaokao. Pires also revealed that Chinese students feel that Gaokao is a gateway to better pay and social life in the country's future; hence the pressure is worth it. The study is valid since the author has incorporated secondary sources and used a qualitative approach for the interviews.

The study by Oyeniran and Uwamahoro sought to identify solutions to the shortcomings of the Chinese education system. Oyeniran and Uwamahoro conducted an internet survey on 11 data sources to extract institutional reports indicating the shortcomings of the Chinese educational system. The researchers applied documentary analysis to analyze the institutional reports and identified gaokao as one of the shortcomings. Oyeniran & Uwamahoro identified gaokao as a shortcoming since the documents analyzed provided evidence of students' rote learning that hinders creativity among Chinese students[11]. Lack of access to all state educational databases was a limiting factor of the study. The study is valid since it followed a qualitative research process.

Gard conducted a literature review to understand students' attitudes toward standardized testing[4]. In the process, Gard reviewed 30 peer-reviewed journals identified through internet research. The research identified testing bias as the leading factor in students' perception of standardized testing. Gard identified gender, socioeconomic background, and culture as the leading causes of bias in standardized testing. The research results revealed that students were likely to experience anxiety and stress, which created a negative perception of standardized tests. The lack of quantitative data for statistical analysis was a limiting factor for the study.

In his research Brown targeted to understand the adverse effects that standardized testing has on learners[1]. Brown conducted qualitative research on 32 third-graders by allowing them to develop their mathematics portfolio. Brown used observation to collect data and analyzed it through observation. The outcome indicated that students expressed enthusiasm about being able to control the assignments they will be graded on; hence, Brown concluded that standardized testing is a source of student anxiety and stress. Reduced class hours were a significant limiting factor for the study. The qualitative action research is valid since it was conducted within the setting of the research participants.

lhan et al. sought to understand teachers' views on high-stakes exams[7]. This descriptive survey research involved a sample size of 191 teachers who were given seven stimulants related to undesirable influences of high-stake exams. They analyzed the data through a many-facet Rasch model leading to the conclusion that "undesirable influence is that" school assessments turn into secondary importance in the eyes of students." Also, Stilhan et al. revealed that administrators focused on strategies to increase test scores rather than learning outcomes, which negatively affected learners[7]. Demir & Kele focused on assessing the impact of the market high-stakes testing on the teaching and learning process of mathematics[2]. They used a sample size of 13 middle school mathematics teachers. This study indicated that high-stakes testing was a demotivating factor in learning mathematics because teachers were required to focus on traditional teaching methods and could not do proper revision.

Nichols & Brewington studied preservice teachers' beliefs about high-stake tests[10]. The research is a cross-sectional mixed-methods study that involved 379 undergraduate preservice teachers who were under different levels of educational psychology. Preservice teachers disliked high-stakes testing, though standard testing improved teacher accountability. Female teachers were more worried about high-stakes testing than their male counterparts. Despite the outcome, other teachers considered high-stakes tests to be essential for high school transition to universities and college. The significant limitation of the study is that the cross-sectional study was done among students from different levels of undergraduate educational psychology courses within the same institution, and hence generalization is limited.

2.2 Effects of standardized testing on students' learning potential

The following table 1 compares the studies on the impact of standardized testing on students' learning potential. Overall, standardized testing is an educational policy that has both negative and positive effects on learners and their learning potential.

Table 1. Studies of the effects of standardized testing on students' learning potential

SOURCE, Author(s) and (Publication Date)	FINDINGS
Michael Hurwitz, Jonathan Smith, Sunny Niu, Jessica Howell,, March 2015, P	"The mandatory SAT policy in Maine increased 4-year college-going rates by 2- to 3 percentage points overall and by ten percentage points among those students who took the SAT only because it was made universal."
Daniel M. Leeds November 2012, N	The research findings indicated that SAT college admission policies create a college entry barrier for students from low-income backgrounds and students with low academic achievements.
Saul Geiser, December 2017, N	The research results showed that Parent Education: The educational level of the student's most educated parent is the strongest predictor of test scores among UC applicants.
Taylor Alette Gamez, 4th May 2015, N	According to the research, expanding standardized testing will result in lower graduation rates and a statistically significant decline in the state's total SAT average.
Manuel Duarte Joao Pires, October 2019 N	The research indicated that gaokao is a major significant cause of stress; some even contemplate suicide at some point while others commit suicide. Also, gaokao is a gateway to better pay and social life in the future.
Rassidy Oyeniran, & Emile Uwamahoro, February 2017, N	The researchers identified GAOKAO as one of the Chinese education system's shortcomings since it focuses on rote learning.
Jonathan Wai, Matt I. Brown, and Christopher F. Chabris, August 2018 P	The research findings indicated that students who pass the standardized tests and join universities have better occupations in the future.
Kelly Gard, May 2020, N	The research findings identified culture, teacher expectations, home literacy, and gender as the causes of testing bias. Also, the research identified that students were likely to experience stress and testing anxiety during standardized testing.
Brianna Brown, May 2019, N	The research found that standardized testing is a source of student anxiety and stress.
Latasha Holt-Bocksnick, August 2016 P	The study outcome indicated that students appreciated the use of embodiment strategies by teachers to help reduce standard testing-related stress.
Jing Zhang, November 19, 2021, P	The study revealed that parents are directly involved in the high-stakes language assessment process by hiring tutors and participating in movements against the exams.
Mustafa Ilhan, Nese Guler and Gulsen Tasdelen Teker, April 2021 N	The study identified undesirable influence is that "school assessments turn into secondary importance in the eyes of the government students and parents."
Cennet Golo works with lu Demir and Ozlem Kaplan Kele, N	The study's results indicated that high-stakes testing demotivates mathematics learners. Teachers were required to focus on traditional teaching methods and could not do proper revision.
Sharon L. Nichols & Shon Brewington, March 2020, N	The research results indicated that most preservice teachers disliked high-stakes testing, female teachers were more worried about high-stakes testing than their male counterparts, and standard testing improved teacher accountability.
Mustafa Ozdere, April 2021, P	The study outcome indicated that exam-focused learning increased private tutoring demand due to using a high-stakes testing system for university enrolment.

It is essential to understand that education targets to create a positive impact on learners. In this case, standardized exams have managed to reveal cognitive abilities to students themselves, hence helping them to focus more on education. Wai et al. also suggested that students who pass SAT exams are likely to attract better job opportunities with better pay[13]. Holt-Bocksnick found an improved relationship between teachers and learners as a result of standardized testing[5]. The research disclosed the students' appreciation of embodiment strategies used by teachers to reduce stress and anxiety caused by standardized testing. Zhang also explained that standardized testing can improve parents' involvement in students' education improving the outcomes. Parents hire private tutors to help their students prepare for standardized tests to gain better outcomes on the tests[14].

On the contrary, other studies have revealed the deficiencies that come with the standardized test on learners. Research by Leeds ascertains that SAT college admissions are barriers to university entry[9]. Not all students have the ability to pass the SAT exam subjects. Subjecting all the learners to the same college admission criteria is a barrier to those who are less competent. Studies have essentially weighed the stress and anxiety that is caused by standardized testing on students. Pires examined the impact of Gaokao on Chinese students and found stress effects among students. Stress and anxiety created by the exams were a cause of suicidal thoughts and suicide among Chinese students[8]. Gaokao is regarded as the world's toughest exam which determines the educational destiny of most Chinese students. Such has created an environment where the students are always under pressure from their teachers and parents to pass the exam. Oyeniran & Uwamahoro also pointed out Gaokao as a drawback to the Chinese education system. The exam fosters the development of rote learning which hinders students' innovation and creativity[11].

2.3 Theoretical framework

The theoretical basis of this research includes two aspects. One is College Impact Models. This series of theories originated in the United States in the 20th century. Based on the perspective of sociology, it emphasizes the influence of the structure and environment of colleges and universities where students' cognition and behavior are located on college students' learning and development. Astin's I-E-O model, Tinto's student integration model, and Pascarella's student change causality model are typical examples[12]. According to this theory, the organizational structure, system and management, teaching and curriculum, policies, services, and environment of colleges and universities may affect students' learning and harvest, and thus affect students' learning potential. The second is Kuh's theory of student engagement. According to this theory, the factors of students' success in university study include three aspects: pre-admission experience, university experience, and external macro-social and economic environment. Among them, pre-admission experience includes academic preparation, family background, financial support policy, college choice, learning motivation, etc. College experience includes student behavior and college status. Student behavior refers to students' learning habits, peer interaction, teacher-student interaction, time investment,

learning motivation, etc. College status includes college environment, academic support, peer support, teaching methods, educational policies, curriculum and practice, and structural characteristics of colleges and universities. The key part is the interaction between students' learning and the school environment, which can not only reflect students' behavior but also reflect the teaching achievements of colleges and universities. The more students devote themselves to activities with effective educational goals, the more they will gain and develop. At the same time, if the school creates more conditions and supports for students, students will be more willing to invest in learning activities, thus stimulating greater learning potential and achieving better learning results.

3 Methodology

3.1 Settings

Z University is a multi-disciplinary key university directly under the administration of the Ministry of Education of the People's Republic of China. It is a national "double first-class" university and is on the national "Project 211" and "Project 985" lists. In the context of higher education in China, Z university adheres to the teaching principle of "learn-centered and practice-assisted" and strictly follows the guidelines for undergraduate and graduate enrollment. Students pass the college entrance examination and graduate examination to be admitted. During the study period, the university will carry out standardized testing activities including but not limited to admission tests, mid-term examinations, and final examinations according to the requirements of various majors. At the same time, in the development process of modern higher education, schools also put forward more non-standardized test forms such as paper sharing, and achievement reporting to evaluate students' learning effect and comprehensive ability.

3.2 Research hypothesis

This study puts forward the following theoretical hypothesis: the setting and results of standardized tests in the process of higher education will have an impact on students' learning potential, and the degree and mechanism of the influence of the school's emphasis on test results on students' independent learning at different levels are also different. This influence may be direct or indirect, that is, the way and mode of academic evaluation will indirectly affect students' learning potential through intermediate variables such as learning strategies and learning behaviors.

3.3 Data collection

The present study collected data with a questionnaire. A questionnaire survey is a survey method in which researchers send questionnaires to respondents in the form of written questions to understand some facts and opinions, ask respondents to fill in the questionnaires realistically, and then collect and organize them to obtain the required data. This paper will send questionnaires to students of different education levels or

representative samples of students and collect questionnaire results, to obtain students of different education levels' feelings about the impact of standardized tests on learning potential and further summarize the scope of influence.

The questionnaire was distributed to 1000 undergraduates and 600 graduate students and received 1576 questionnaires, and the validity of the questionnaires reached 90%.

3.4 Data analysis

Statistical analysis is an analytical method that starts with the quantitative characteristics of things and uses certain statistical methods to carry out quantitative analysis, to excavate the characteristics and regularity of things contained in the number of things. In the stage of data processing and analysis, EXCEL software was used to analyze the distribution state and digital characteristics of the data obtained from the survey on standardized test methods, students' recognition, and students' performance by descriptive statistics. Then, through the method of data perspective and correlation analysis, this paper studies the mechanism and influence of standardized tests on students' learning potential.

4 Results

4.1 Academic evaluation tendency of different subjects and learning stages

Table 2 shows the responses of students of Z University to their academic evaluation mode. According to the classification of different disciplines, social humanities students tend to be more inclined to open tests (such as topic discussion and special discussion), while their tendency to standardized tests gradually decreases. The tendency of science students to standardized tests is increasing across course levels. According to the characteristics of science subjects and students, we can imagine that the academic ability of science is reflected in specific practice and test results. For these students, their tendency to standardized tests is gradually increasing, to better test their learning results. Compared with social science, the tendency of engineering students to standardized tests (such as paper tests) increases slowly in different learning stages.

Table 2. Academic evaluation tendency of different subjects and learning stages

classification \ view		Standardized tests	Open test	No phase testing
Social science	Freshman/Sophomore year	87	37	66
	Junior/Senior year	55	69	56
	Graduate student	34	83	76
science	Freshman/Sophomore year	54	48	72
	Junior/Senior year	77	45	61
	Graduate student	68	57	62
engineering	Freshman/Sophomore year	44	56	73
	Junior/Senior year	79	43	67
	Graduate student	62	59	61

4.2 Students' views on standardized testing at Z University

As can be seen from Table 3, students of different disciplines have different views on standardized testing. Students of social sciences disciplines, due to their professional characteristics and learning habits, mostly think standardized testing is too formalistic, which will limit their learning and growth, and is not the best way to evaluate the learning results in the stage. For science and engineering students, standardized tests bring an objective and rigorous evaluation effect, which can help them to check the gaps and fill in the gaps. People are more inclined to use standardized tests to evaluate the academic achievements of the stage.

Table 3. Tendency of different subjects and program levels to academic evaluation

classification \ view		Formalism	Better way to evaluate learning	Limit learning	Increase burden
Social science	Freshman/Sophomore year	32	58	27	27
	Junior/Senior year	55	47	56	76
	Graduate student	76	39	83	43
science	Freshman/Sophomore year	44	56	36	29
	Junior/Senior year	32	67	27	56
	Graduate student	53	71	43	32
engineering	Freshman/Sophomore year	47	56	36	36
	Junior/Senior year	35	76	34	46
	Graduate student	46	64	75	32

4.3 Opinions of students with different achievement levels on the examination

As can be seen from Table 4, students with better scores pay less attention to the exam. For such students, the exam is only a tool to help them to check and fill in the gaps so that they can better absorb knowledge. Students with poor grades are more likely to be troubled by exams, and they will stay up all night to study or worry about exams.

Table 4. Students' views on examinations at different achievement levels

classification \ view		Exams can be stressful	Exams don't bother you
good	Freshman/Sophomore year	32	156
	Junior/Senior year	55	145
	Graduate student	76	167
medium	Freshman/Sophomore year	84	96
	Junior/Senior year	92	87
	Graduate student	63	121
poor	Freshman/Sophomore year	149	35
	Junior/Senior year	89	76
	Graduate student	86	88

5 Conclusions

The main contents of this research include three aspects: the opinions of students of different majors and grades in Z University on standardized testing, the impact of standardized tests on different population models, and the influence mechanism of standardized tests on students' learning potential.

5.1 Different tendencies toward academic evaluation among students of different disciplines

Under the influence of Chinese traditional education ideology, the traditional evaluation mode plays a dominant role in the academic evaluation of Chinese university students and becomes the main choice of teachers. Although some colleges and universities draw lessons from the non-predetermined academic evaluation model oriented by pluralism values, they mostly choose to use one of the classic models such as the Taylor model and CIPP model due to the high cost, the difficulty of operation, and insufficient theoretical level of teachers. The selection of a single, general, resulting in the evaluation is still in the framework of the traditional model, and the evaluation of a single way. At present, the one-time examination is still the main way of academic evaluation for college students. It ignores the cultivation of students' cognitive ability, innovative ability, and logical thinking ability, and makes academic evaluation too simple.

5.2 Different influences of standardized testing in higher education

The purpose of setting up students' academic evaluations in colleges and universities is to diagnose, feedback, and improve students' academic performance by using the information and results of college students' academic evaluations, to promote their all-round development. However, the traditional academic evaluation system for a long time focuses on students' mastery of textbook knowledge and determines students' comprehensive quality level based on exam scores and rankings. It neglects the investigation of students' life experience and practical ability, as well as their independent thinking ability and innovative ability, which cannot reflect the diversified personality of college students. It is not conducive to a comprehensive and objective evaluation of students, and the evaluation function is not good. Meanwhile, standardized tests have different degrees of influence on different student groups. If this kind of education policy is blindly carried out, it will be unfair to students with different characteristics.

5.3 Individualized evaluation model in policymaking

According to the survey analysis, there are individual differences in the development of students of different ages, and there are group differences due to different gender and age. In the process of policy design, higher education should consider an individual's actual level of development, comprehensively use a variety of evaluation modes, pay

attention to students' specialties, choose an evaluation mode suitable for students' personality development, and create conditions for students' further development.

As there are group differences in cognition and application ability between junior and senior students, and there are group differences in thinking mode between liberal arts and science students, teachers should control the evaluation process and pay attention to the evaluation effect when choosing the academic evaluation mode. Therefore, teachers should fully respect the individual and group differences of students, choose the academic evaluation model that truly serves the development of students' personalities, and promote the development and improvement of students' overall quality. In addition, the content of academic evaluation should include learning cognition, emotion, and operational skills, as well as multiple aspects of students' abilities such as thinking and innovation as well as individualized development. Different evaluation modes should be selected according to different evaluation contents, and the blind use of standardized test mode should be avoided to inhibit students from exploiting their learning potential.

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