Encyclopaedia of Academic Sociology

Jyoti Puri

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CHAPTER 1

GAME SPORT READING FROM A SOCIOLOGY OF KNOWLEDGE PERSPECTIVE

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ABSTRACT:

In addition to altering readers' reading styles and habits, the development of media technology has also attempted to affect their social behavior. Through the lens of activity theory and the sociology of sustainable knowledge, this essay investigates the effects of technological development on reading. Digital reading has been proven to have an increase in "front stage" performance and reading anxiety in society, and this anxiety has increased through time. The study demonstrates that the current digital reading mode is actually media consumption, which is not advantageous for the dissemination and generation of sustainable information. Reading will also open up a new chapter when technology advances further. The wisdom of human symbiosis will be endlessly stored and strive toward the global brain era, which will aid in improving the transmission of sustainable knowledge and igniting the vitality of sustainable knowledge production. Sports sociology, often known as sociology of sport, is a branch of sociology that focuses on sports as social phenomena. The relationship between sociology and sports, as well as diverse socio-cultural structures, trends, and organizations or groups participating in sport, are the subjects of this field of research. This field of study examines how sports benefit individuals and society as a whole on an economic, financial, and social level. The goal of sport sociology is to use sociological analysis to understand how athletes and sports teams conduct and behave.

KEYWORDS:

Altering, Development, Increase, Sustainable.

INTRODUCTION

The majority of the reading market is now dominated by digital reading thanks to the growth of intelligent media in recent years. Every technological revolution is accompanied by apprehension and worry, but it also brought with it new possibilities and room for advancement. According to the most recent data, China's adult national digital reading rate in was 79.3 percent, up 3.1 percentage points from the previous year. The Internet and new media are having an increasing impact on readers' reading habits, and reading technologies like smartphones, tablets, and e-book readers are becoming more and more integrated into peoples' daily work and personal lives. "Reading on-screen" has developed into a distinctive "landscape" of contemporary society. In addition to altering the conveyance and form of reading materials, the ecological relationship between readers and reading medium alters readers' reading habits and modes of thought that are derived from traditional paper reading.

Reading requires multiple executive processes in addition to oral language skills. Training executive functions, in particular attentional control, has been recommended as a possible method of enhancing reading abilities due to its significance for literacy. A word tree-based instructional game tool was created, which not only helped kids become better readers but also made learning fun. Children's compliance with rules, general behavior, reading abilities, and social inclusion all increase as a result of playing the good behavior game. Among them, we should point out the use of game-based learning and gamification to encourage pupils to

learn to read and write. A thorough phonics-based reading curriculum included Reading Turbo The study's objectives were to assess whether the game would improve children's word reading speed and how much prereading skills and in-game mechanics may account for individual differences in players' reactivity to the game. Technology and a growth in humans' non-utilitarian pursuits are what are driving the gamification of mobile reading. In order to assist users, immerse themselves in it and accomplish predetermined goals, mobile reading also generates fun through mechanism design and element matching.

In our country's academic circles, there has been substantial research on digital reading itself, but less is known about the social effects of intelligent media. There is disagreement over the best way to use reading and the media to improve sustainable knowledge production and transmission. As a result, empirical study on the state of reading in the country today and the precise connection between media technology and readers' social behavior is lacking. Technology evolution has created a dilemma that requires the attention of the entire society: how to make technology better realize sustainable knowledge creation and cultural inheritance. Sport is governed by laws, norms of conduct, time and space restrictions, and regulating organizations. It is focused on a target that identifies both the winner and the loser. It is ludicrous and competitive. All sports have a cultural context and are entangled with the value structures and power dynamics of the host society.

The sociology of sport albeit not the phrase itself originally came into existence around the end of the 19th century, when the first social psychological studies focusing on the effects of competition and pace-making on groups were conducted. One of the first attempts to think about sports in a broader sense, outside from cultural anthropology and its interest in games in human society, was Johan Huizinga's Homo Ludens or Thorstein Veblen's Theory of the Leisure Class. The value of play in culture and society is covered in Homo Ludens. Huizinga contends that play, and particularly athletics, is fundamental to and a prerequisite for the formation of culture. These published works aided in the development of the discipline of sport sociology. Sports sociology began to receive a lot of attention as an established, accepted discipline of study around 1970. In order to research the subject, the North American Society for the Sociology of Sport was established in 1978. The Sociology of Sport Journal, its academic publication, was established in 1984.There was a great deal of debate going on when the 1936 Berlin Games were being held.

This was a result of the Nazis' disdain for anyone who was not an Aryan, namely those with blonde hair, blue eyes, who were tall and athletic. persons were therefore incredibly startled that persons of races other than Aryans could compete in the 1936 Berlin Games. In addition, "Nazis were deeply offended by sporting contacts with "primitive" races and by competing against Negro athletes, in particular." In light of this, Adolf Hitler, the leader of Nazi Germany, would later declare that he agreed with the idea of segregation for interracial athletic competitions because those who had ancestors who "came from the jungle were seen as primitive because there physiques were stronger than those of civilized whites." Because they were unable to separate the races, the Nazis utilized their animosity toward non-Aryans as fuel, which enabled them to use the 1936 Berlin Games as a means of establishing control over the lesser races. Racial social interactions have long been a part of sport. Count Arthur de Gobineau's efforts to establish the physical and intellectual superiority of the white race towards the end of the 19th century resulted in the first scientific investigation of race. Racism also benefited from the application of Darwin's idea of natural selection. After black athletes' athletic prowess was established, the notion turned away from intellectual prowess and toward physical prowess.

Numerous racist hypotheses were put forth. Because animals ate all the slow ones, black people had exceptional athletic ability. According to the "middle passage" myth, only the

most physically fit black people could endure the slave trade and labor on plantations. According to the matriarchal argument, coaches served as father figures for black people because their absent fathers forced them to put their rage into sports. The mandigo idea postulated that the strongest black women were bred with the strongest black males. According to the psychological explanation, black athletes lacked the brainpower necessary for leadership roles in sports. The "dumb jock theory" said that because black individuals struggled in the classroom, they turned to sports scholarships. Finally, the genetic explanation proposed that black athletes had higher concentrations of particular muscle fibers. According to structural functionalist ideas, society is a complex system whose components cooperate to foster stability and solidarity. Religious rituals aimed to encourage the social and moral cohesion of the community before sport even existed.

Bromberger noticed parallels between football games and religious rituals. Matches take place in a specific setting, are held on hallowed fields that may not be tainted by outsiders, and cause deep emotional reactions in the fans. Similar to religious festivals, the spatial arrangement of spectators reflects the social power dynamics. Football seasons follow a set schedule. On match day, group roles take on a ceremonial nature, with participants dressed in distinctive rites. Football has a global organizational structure, much like a church. From pre-match through post-match, matches have a sequential order that directs participant behavior. And finally, football traditions foster a sense of community. Songs and choreography can be viewed as a ceremony that will soon take place in which fans will lend their support to the squad.

Robert K. Merton identified five responses to the social structure that might be applied to sports in order to account for the reality that not all acts support it: conformism, innovation, ritualism, disengagement, and rebellion. Erving Goffman built on Durkheim's idea of constructive rituals and emphasized the sacred nature of a person's "face" by doing so. Both positive (extending compliments, greetings, etc.) and negative (avoidance of conflict, expressing regret, etc.) rituals preserve one's face. For instance, sports journalists use both positive and negative rituals to protect the image of the athlete they want to keep in contact with. Furthermore, Birrell contends that sporting tournaments are ritual contests in which competitors demonstrate their character by a combination of bravery, skill, and integrity. A strong performance helps to maintain the athlete's positive image.

DISCUSSION

Regarding its definition, the majority of academics concur with Plato's assertion in the Theaetetus that "sustainable knowledge is a true and verified belief. The classification of sustainable knowledge is regarded as an extremely complex cognitive activity, and various epistemists have different classification methods for sustainable knowledge. The history of western philosophy tradition tends to view epistemology as the theory of sustainable knowledge. According to the social sustainable knowledge school, all sustainable knowledge, including thought, intuition, and all types of sustainable knowledge, exhibit sociological traits when compared to the stages of social evolution. Social relationships serve as the primary mediator of meaningful experience and have an impact on the nature of mind and lasting knowledge. According to the perspective of sustainable knowledge creation, the process of producing new sustainable knowledge is difficult and can only be completed by connecting to and understanding preexisting sustainable knowledge (also known as "pre-sustainable knowledge") and internalizing it. The spiritual life is mostly determined by social processes. Examining the social group that the thought is coming from is important when studying the function of thought. In addition to influencing modern ideas, social economy and social life also have an impact on the design, organization, and content of spiritual goods. The interests and goals of the person's group are greatly influenced by his or her thoughts.

This essay uses the activity theory's research framework, which is based on the idea of needs. The authors conducted an electronic questionnaire survey of 1,003 readers and three rounds of in-depth interviews with 22 readers who had specific reading habits from the standpoint of the sociology of sustainable knowledge. This essay explores the audience's reading preferences, motivations, habits, and contexts while also examining the audience's reading behavior across a range of demographic variables, including age, income, educational attainment, and professional standing. After learning about the selection of reading material, the traits of reading behavior, the preferred reading media, and the changes of reading environment, this essay analyzes the reading behaviors of the readers against the backdrop of the shift of the digital reading mode. This paper further examines the social effects of the digital reading mode, focusing in particular on the readers' cognition, identity, and sustainable knowledge acquisition effect, based on numerous reading surveys and media research literature from both domestic and international sources.

Using a questionnaire

From the thirteenth to the seventeenth National Reading Survey findings, preparations for the survey began in November 2018 and lasted for five years. Additionally, we gathered and used the statistical analysis software SPSS 21 to evaluate the reading survey surveys. To ascertain any potential reading issues in the society, a questionnaire was disseminated throughout the nation, including Shanghai, Xi'an, and Chongqing. Thus, it is determined that this time, using the Reader Reading Situation Questionnaire Survey's mentality to carry out the question-setting, Q1-Q10 are set up through the daily specific reading behavior of the reader (including reading time, reading content, and reading carrier), as well as reading purposes; Q11-Q14 are from the four dimensions of reading anxiety, namely, lack of reading time, information interference, lack of reading habits, and lack of systematic reading; and Q15-Q18 are from the Reader Reading Situation Question The two components of sustainable knowledge anxiety technological change and social competition and their effects on readers are the focus of questions 18 through 20; the screening section's questions 21 through 26 are intended to gather background knowledge on the subjects [1]–[3].

Interview Technique

readers were chosen at random from a pool of readers to correctly investigate the reading habits and behaviors of readers from a variety of backgrounds, including age, gender, education level, occupation, and depth of reading experience. On their reading habits, reading environments, and reading motivation, extensive interviews were done. 66 interviews are conducted for 22 readers, with each interview being conducted three times. Each interview has a time limit of 1.5 to 2 hours, and during that time, the interviewer attempts to explain the reader's reading behavior from the reader's own point of view, going from the surface to the core and from the superficial to the deep. The three interviews were conducted in the following order The first round of interviews is centered on the interviewees' particular reading histories. The goal of the interviews is to get a general understanding of the interviewees' perceptions of their previous reading habits. In the second set of interviews, reading habits were monitored for a week and contrasted with self-reported reading habits. The respondents' assessments of their reading habits are heard in the third round. One is paying attention to how readers respond to their previous reading behaviors, and the other is paying attention to what readers say they will read in the future. The three interviews' whole transcripts were kept, and the most important information was typed out. Based on actual experience, each interview's transcribed data had between 1,500 and 3,000 words, with a minimum of 5,000 words for each interviewee [4]–[6].

Research Results

The activity theory is used as a concrete framework in this study. The subject, object, and community are the three primary components of the activity theory. Tools, rules, and the division of labor are the other components. Among them, "subject" refers to the reader, "object" refers to the specific reading material, "community" refers to the group formed during reading, "rules" refers to the guidelines that readers must adhere to while reading, such as gathering knowledge and ensuring its transmission, and "division of labor" refers to how members of the community are given their respective roles during socialized reading.

Differences in Reading Behavior

The qualitative and quantitative methodologies have been primarily used in the major body reading behavior analysis. Through the examination of survey and interview texts, we discover that while male and female readers have similar reading habits in traditional forms, male readers engage in digital reading far more frequently and for longer periods of time than female readers When it comes to reading time, respondents prefer to read at night. Readers between the ages of 20 and 29 spend the least amount of time reading and are more likely than readers in any other age range to read on paper The preference of the reading subject over the reading content is the main focus of the examination of the reading object. According to the study, the majority of respondents favored current affairs news (710 people), followed by entertainment news (404 people), which is directly tied to how much amusement is available in today's culture. In addition, life information influences how readers read the content. People read for a variety of reasons, including to learn things that would improve their life.

I mainly limit myself to binge-watching the news and lighthearted material. I will also look for some professional literature to read if there is a job appraisal or if work needs to be promoted (M4). There are two categories of reading subjects available while looking for reading materials: active selection and passive selection. While passive selection refers to reading based on big data recommendations, active selection refers to users actively seeking out the information. I frequently surf since the news is shorter and has more material, which is frequently not the main reason I read. Keeping up with the news is still important (M8) [7]–[9].

Reading for All Is a Remarkable Phenomenon

The examination of readers' reading environments is the main emphasis of the reading community's study. In general, readers have better reading habits now, yet there is more overt reading anxiety and long-term knowledge worry. China is going through a period of social change. People are filled with anxiety about their unclear future and success due to technological advancement and social competitiveness. They also feel a great deal of ambiguity and nervousness about their social standing and prestige. In terms of reading, 87.33% of the respondents agreed that there is "a lot of new technology, new sustainable knowledge that we have too much to learn" 48% agreed that "I feel like everyone knows more than I do and I'm falling behind"; more than half agreed that "I feel like my career is in trouble and I'm slow to improve myself." Users who read for two to three hours every day displayed a generally consistent performance but also experienced little worry.

The Use of Technology Is Particularly Strong

The study of reading aids is really a study of how reading-related media is slanted. Readers now have a wider variety of reading options because to the growth of mobile media. More people enjoy reading on digital devices due to its popularity and convenience. Traditional reading, however, continues to play a significant role in readers' daily lives because of its

authoritative, scholarly, and other indispensible aspects. The most often used words in the text analysis of interview data are "digital," "smart phone," and "paper" When it came to media preferences, 19 (86%) of the respondents claimed they were engaged in both types of reading media and compared traditional reading with digital reading to explain their choice. This demonstrates that readers are consciously selecting their reading device in accordance with the demands of their various reading environments. When we examine the text, we see that the traditional reading habit of reading from a piece of paper is frequently linked to "ritual sense" and "tactile sense."

"For me, reading on paper has a stronger sense of ritual, one that I can experience by touching the paper with conventional reading and one that digital reading cannot match. I could only properly understand that I was reading through traditional reading This reader psychology is a useful illustration of how the social environment affects reading in a time when traditional reading is becoming increasingly rare. Reading a paper gives the reader the impression that he has improved his appeal. Traditional books provide a reading experience where the reader may focus on reading without being distracted by pop-up messages. Digital reading cannot replace the feeling of painting on a book. This demonstrates that, in the minds of the majority of readers, conventional reading holds a significant place in the reading experience and effect. Why then do more and more people read digitally in reality?

E-books are less expensive to download than traditional books, and digital reading is simple to obtain. Since the library is quite far from my house, I rely more on digital reading, especially with the Kindle" (M4). Typically, reading papers calls for a particular setting. As social media continues to grow, digital media now offers a richness and immediacy that traditional reading cannot match. This naturally results in a different division of labor between traditional and digital reading traditional reading for professional sustainable knowledge and digital reading for news and amusement. Digital reading, on the other hand, is preferred by some readers precisely because it is not constrained by time or geography. Social reading is becoming more prevalent in the division of labor.

The development of reading and interpersonal relationships is the primary focus of research on the division of reading activities. How would you feel if you went for a lengthy period of time without reading? Evidently, for readers, the role of reading is not only in their own entertainment or self-improvement but also a part of social interaction. 18 (82%) of the respondents said they would lose themselves and feel empty if they did not read for a long time; eight respondents (36%) mentioned "social disconnection." "After a lengthy period of not reading, I feel out of touch with society. I would be unable to keep up with the times and would not share any interests with those around me if I was unable to obtain information about social change through the Internet and the media. Reading enables us to stay connected to society in this way. Reading provides us with knowledge, which in turn enables us to forge relationships with others. A person who has not read for a long time is likely to fall behind the times and experience anxiety as society changes (M1).

Reading exchanges amongst family members are a prominent phenomenon in addition to general social reading. Six female readers between the ages of 20 and 39 who are prime reproductive age participated in our in-depth interview. Four of the readers (or 67%) mentioned kids. The reading habits of female readers in this age bracket frequently have a strong connection to a child's upbringing. "Every stage of a child's life is different, and I'm raising one for the first time. I may learn more about parenting, benefit from the experiences of others, and take better care of the infant by reading parenting literature" [10]–[12].

CONCLUSION

Polanyi refers to the creation of ideal sustainable knowledge as "personal sustainable knowledge," hence it follows that this activity is entirely personal. In line with our initial theories, people engage in sustainable knowledge production as a process and activity to actualize their individual interests. Only when it is a purely personal activity can sustainable knowledge production be considered objective; otherwise, if objective factors are involved in the process of producing sustainable knowledge, the knowledge itself may become subject to subjectivity and lose its credibility.

Each type of reading development process is an innovation-driven product that illustrates the direction in which reading is moving, from paper reading to digital reading to time spent reading to time spent reading on a screen. Because technology emerges from society and becomes an integral part of it, its role will go beyond just bridging the gap between things and people. It will keep collaborating with people to create a better society and actualize the redeemed spirit of the times.

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CHAPTER 2

INTERDISCIPLINARY RESEARCH ON THE DEVELOPMENT OF SPORTS SOCIOLOGY CURRICULUM

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ABSTRACT:

The sociology of sports course from an interdisciplinary perspective needs to trace the historical trajectory of the interactive development of the sociology of sports course and other disciplines and grasp the law of the cross-development of the sociology of sports course and other disciplines. This is in accordance with the premise of emphasizing interdisciplinary learning and reference. Based on the overall concept of sports complexity, the comprehensiveness of sports science, the intersection of sports science research, and the interdisciplinary needs of sports scientific research innovation, this study applies an interdisciplinary approach to show the need for interdisciplinary research in sports science in China. The research object is innovation ability, and the significant influencing factors of sports scientific research innovation ability are looked at. The impact of interdisciplinary research on sports scientific research innovation is investigated using qualitative research and an index system of sports scientific research innovation ability. To examine the relationship between the significant components in scientific research innovation ability and properly comprehend the important function of interdisciplinary research in Chinese sports scientific research innovation, the influence of ability is exposed through quantitative analysis.

KEYWORDS:

Accordance, Development, Intersection, Research.

INTRODUCTION

The foundation and driving force behind scientific research innovation in the sports sociology curriculum is interdisciplinary research. Even while the subjects of modern scientific research are continually being honed and deepened, and the field of study is getting smaller and more specialized, the problems at hand transcend the purview of any one discipline. In order to study a particular scientific subject, it is frequently essential to assemble a research team made up of academics from other disciplines and to borrow the research theories and methodologies from other fields. Humans are the focus of physical education's study, which includes a wide range of intricately detailed human subjects. It must deeply incorporate and learn from the theories and practices of other disciplines. The questions themselves have multidisciplinary aspects because many research questions are presented in response to social requirements. This necessitates that sports science conduct interdisciplinary and thorough study based on more complex and reliable stability.

The ability of sports science research to innovate is now weak, and the discipline's progress is not being strongly pushed forward. The fundamental issue is the dearth of techniques for elucidating the essence of intricate sports occurrences. Interdisciplinary research can enlarge more complex issues in the field of sports research, reveal the fundamental principles and laws governing intricate sports phenomena, and produce some new interdisciplinary fields of study, fill in the gaps between different subdisciplines, and advance different facets of sports science. The current research, however, is solely focused on the sharing of representation and experience between many disciplines, which is limited from the standpoint of the

advancement of interdisciplinary research in sports science. Since the commencement of both disciplines, sports and sociology have had many interrelated relationships. Around the same time, in the middle of the 19th century, both emerged as separate academic disciplines. Physical educators and sociologists became more closely connected in their professional events over the first fifty years of both disciplines thanks to a number of shared interests. In the early half of the 20th century, there was a loosening of linkages between the two disciplines, but "The New Physical Education" was based in an awareness of social structure and social processes, both of which are major sociological issues.

The sociology of the body as a subfield of sociology has attracted a lot of attention as a subject of discussion and study since the 1980s. It started to be taught as a separate subject in many universities' undergraduate and graduate programs as a result of this atmosphere. The actual significance of body sociology in terms of sociology is that it has an effect on renewing, rejuvenating, and changing present theoretical tendencies. The ability to reform and recreate fundamental sociological variables, conceptions, and presumptions has been attained by body sociology. Flintoff et al.'s physical education study was primarily concerned with gender, racism, class, sexual orientation, and disability. Due of the ambiguity and inconsistency of these categories, Azzarito and Solomon looked at how gender, ethnicity, and socioeconomic position intersected. By examining register data from all students who graduated from compulsory school in 2014, Stenberg and Hagberg investigated the factors influencing higher grades in physical education (PE) and sports and demonstrated that the likelihood of achieving a high grade in PE is influenced by migration background, parents' educational level, and gender.

According to the author of the connection between school sports and lifelong sports as well as the achievement of lifelong sports are made possible by the combination of school sports, sustainable sports ability, and health education. Additionally, it expands on the reform of school athletics and changes people's perspectives on sports, emphasizing lifetime participation. The relationships between gender, sexual orientation, and sports fan identities were examined by Allison et al. Only 11% of American people, according to the authors, do not identify as sports enthusiasts at all, and over half of American adults describe themselves as ardent sports fans. Compared to men, women and adults are less likely to describe themselves as avid sports fans. Furthermore, self-identified sports fandom is adversely correlated with identifying as gay, bisexual, or another sexual identity as opposed to heterosexuality. But because of how gender and sexuality interact, men's self-identified sports fandom is adversely correlated with being homosexual, but women's fandom is not.

This study seeks to build on a multidisciplinary examination of the sports sociology curriculum to develop the program's capacity for innovation. It is clear that this is a challenging assignment. The integration of theory and empirical research is examined, as well as the ability to create novel sports sociology curricula. The following implications of this study for the creation of the sports sociology curriculum: The integration of various academic fields into a single endeavor such as a research project is known as interdisciplinarity or interdisciplinary studies. It incorporates information from many other disciplines, including sociology, anthropology, psychology, economics, etc. It involves generating something by thinking outside the box. As new needs and professions arise, it is connected to an interdisciplinary or an interdisciplinary field, which is an organizational unit that transcends conventional boundaries between academic disciplines or schools of thought. Large engineering teams are frequently interdisciplinary since projects like power plants, mobile phones, and other things necessitate the blending of several specialties. But occasionally "interdisciplinary" is only used in academic contexts.

Studies that incorporate techniques and ideas from numerous well-established disciplines or conventional fields of study are said to as interdisciplinary in education and training pedagogies. In order to connect and integrate many academic schools of thought, professions, or technologies along with their unique perspectives in the pursuit of a single goal, interdisciplinarity engages researchers, students, and teachers. To handle complicated problems, such as the epidemiology of HIV/AIDS or global warming, various disciplines must be understood. When a subject, like women's studies or ethnic area studies, is thought to have been overlooked or even misrepresented in the traditional disciplinary structure of research institutes, interdisciplinary approaches may be used. As with difficult topics, interdisciplinarity can be used to combine the viewpoints of two or more fields in order to understand them.

When researchers from two or more disciplines combine their efforts and adapt their methods to be better suited to the issue at hand, such as in the case of a team-taught course where students are expected to comprehend a given subject in terms of multiple traditional disciplines, the adjective interdisciplinary is most frequently used in the context of education. For instance, when the topic of land use is evaluated by several disciplines, such as biology, chemistry, economics, geography, and politics, it may appear differently. Despite the fact that the terms "interdisciplinary" and "interdisciplinarity" are generally thought of as twentieth-century concepts, the idea has historical roots, most notably in Greek philosophy. While Giles Gunn claims that Greek historians and playwrights used concepts from other fields of knowledge (like medicine or philosophy) to better understand their own material, Julie Thompson Klein attests that "the roots of the concepts lie in a number of ideas that resonate through modern discourse the ideas of a unified science, general knowledge, synthesis and the integration of knowledge Men who were knowledgeable in surveying, material science, logistics, and other fields were needed to build Roman roads. Interdisciplinarity is necessary for every broad-minded humanist project, and history is full with examples, such as Leibniz's task to develop a system of universal justice in the seventeenth century, which involved linguistics, economics, management, ethics, law philosophy, politics, and even sinology.

A common belief that the traditional disciplines are unable or unwilling to solve a significant issue can often give rise to interdisciplinary programs. For instance, throughout the majority of the 20th century, social science fields like anthropology and sociology gave little attention to the social analysis of technology. As a result, a lot of social scientists with an interest in technology have joined programs focused on science, technology, and society. These programs are often staffed by academics from a variety of fields. They may also result from cutting-edge scientific discoveries like nanotechnology, which cannot be addressed without fusing the methods of two or more different disciplines. Examples include bioinformatics, which combines molecular biology and computer science, and quantum information processing, which combines quantum physics and computer technology. Research on sustainable development focuses on issues that call for integration of many social and natural science fields as well as analysis and synthesis across the economic, social, and environmental sectors. Interdisciplinary research is crucial for the study of health sciences, including when determining the best treatments for disorders. Interdisciplinary Studies degree programs are available from several colleges and universities that are accredited.

DISCUSSION

Studying the Curriculum for Sports Sociology

Sports sociology is a field that combines sociology and sports science. It is a science that investigates how sports function socially, how they grow legally, and how they interact with society. Spencer, Weber, and Simmel were among the sociologists who focused on sports at

the end of the 19th century; they had all studied social problems associated with athletics. When the monograph "Sports Sociology" was published in 1921, the sociology of sports was officially recognized as a separate academic field. A link between sports science and the outside world, modern sports sociology has deep ties to sociology, management, psychology, culture, ethics, and aesthetics. The issue that the sociology of sports has to deal with is that sports are a constantly complicated and socialized phenomenon.

The professionalization and commercialization of sports have advanced due to the involvement of numerous economic activities, and while they still represent a trend toward democracy and peace, they have also evolved into a political phenomenon. Social issues in sports are becoming more prevalent due to tools of dominance and political rivalry, corruption in sports, on-field violence, use of illegal substances, gender and racial discrimination, religion, and cults. These complex sports social phenomena go beyond the purview of sports science research and involve numerous social and political factors. Internally, it examines how people's social beliefs and behaviors relate to sports, as well as how sports function, are organized, and evolve. Externally, it examines the connections between sports and various social phenomena. The development of a theoretical framework for sports sociology, the interaction of sport and society, the analysis of social issues in sport, the social structure of the sporting world, and the evaluation of the social value of popular, competitive, and professional sports are all included in the study of sports sociology. Based on social theories, views, and methodologies, research on these topics should integrate the two disciplines of sociology and physical education and examine physical education as a stand-alone cultural system of human society.

Interdisciplinary Sports Sociology Analysis

Sports sociology is a field that combines sociology and sports science. It is a science that investigates how sports function socially, how they grow legally, and how they interact with society. Spencer, Weber, and Simmel were among the sociologists who focused on sports at the end of the 19th century; they had all studied social problems associated with athletics. When the monograph "Sports Sociology" was published in 1921, the sociology of sports was officially recognized as a separate academic field. A link between sports science and the outside world, modern sports sociology has deep ties to sociology, management, psychology, culture, ethics, and aesthetics. Sociology takes methods from the natural sciences, such as physics and biology, and formulates its questions and findings in a manner similar to them in order to be unaffected by preferences and emotions. However, many sociology scholars look at social issues from the perspective of the humanities and social sciences, notably philosophy, because it is challenging to understand human society only using "hard science" on matters relating to emotion and morality. Consider societal challenges from the angle of intersecting research.

Sports sociology is a broad field that encompasses both social science and sports science, and it must apply sociological research methodologies to analyze sports phenomena. As a result, its research is inextricably linked to sociological research techniques like survey research and observation research. Empirical research is in line with the natural sciences and, to a large extent, leans on their research methodologies due to its mainstream status. With a focus on research paradigms, theoretical testing, and the use of scales, measurement techniques, statistical methods, and computer application techniques to identify correlations and causal relationships with statistical analysis, sports sociology also draws on sociology's research ideas. Analysis becomes a defining feature of it3. The Development of Sports Sociology Curriculum's Scientific Research Innovation Capability in the Interdisciplinary Field

The significance of innovative scientific research has gained prominence in the context of very distinct and complete science. The capacity for creativity of scientific research has a significant role in the success of scientific research innovation. The thorough and in-depth study of innovation must include the development of innovation capacities, which is to say, understanding the various components and indications of innovation and how to determine their applicability. In order to investigate these features and indications, it is objectively necessary to have a thorough comprehension of scientific research and innovative skills. Then, in order to develop innovation capacity for scientific research and to implement effective management of future scientific research, it is necessary to conduct an objective quantitative examination of abstract innovation ability. The degree and scope of sports science research are directly impacted by the innovation capacity of the discipline. The competitiveness and advancement of sports science within the total scientific endeavor will be promoted or constrained by the quality of its innovation ability construction. Analyze the fundamental problems with sports science research and your capacity for innovation.

Examining the Scientific Research Innovation Ability in Sports

Business disproportionality frequently kills the brightest ideas in their infancy, according to management gurus Clayton M. Christensen and Michael E. Raynor. They contend that the manager or department responsible for innovation is to blame, not technology, for the failure of innovation. In order to do this, they proposed the "RPV model," which breaks down the management of innovation into three components: resource (Resource), process (Process), and value (Value). This model was founded on the resource point of view in economics. Resources for scientific research include people, technology, equipment, information, money, various partnerships and policies, as well as both real and intangible resources. It is simply transferable into management and has flexible configuration options. The procedure entails putting money into new items to get better returns. Through coordination, interaction, and decision-making, resources are pooled and redistributed in this process. The innovation process makes sure that the task and the goal are in line with one another [1]–[3].

Values determine the capability range of organizational management and have an impact on goal realization from the level of strategy. The output and transformation of scientific research outcomes are impacted by the values that innovation-driven activities in science research are directed by. The national innovation ability system has a component dedicated to sports science research. The system of sports scientific research innovation ability is built from three aspects: input, operation, and output of scientific research innovation ability, drawing on the theory of "Resources, Processes, and Values" of Clayton and Michael.

The Capacity to Finance Innovation

Recombining materials to get novel outcomes is the activity of scientific research. This activity must be resource-based and fund activities related to scientific research. The number and quality of input resources have a clear impact on the output of innovation activities, and the level of innovation ability in sports scientific research is no exception. As a result, having the money to invest in innovation is both a requirement for scientific research and a concrete assurance of having the potential to innovate. The level of innovation investment capability determines where innovation activities begin, shapes the future landscape of sports science, and serves as a crucial barometer for the innovation potential of scientific research. Based on the influencing aspects of sports scientific research innovation ability, innovation investment ability can be divided into three components [4]–[6].

Research Group

According to the human capital hypothesis put forth by economist Theodore W. Schultz in the 1960s, investments in physical capital have a significantly smaller role than those in human capital, and their growth rates are also substantially lower. The transfer of physical capital to human capital is the main focus of capital accumulation; education investment makes up the majority of human capital investment. The work of several generations of scientists has improved the ability of scientific research to be innovative.

Sports scientific researchers who are involved in scientific innovation activities make up the majority of the human resource input for sports scientific research and innovation capacity. The quantity, caliber, and organization of these scientific researchers influences and, to some extent, determines the feasibility and viability of innovative activities. Efficiency for sports research and innovation capacity reflects the quantity and caliber of human resources [20]. An amazing scientific research team with a rigorous study style, sound theory, the emancipation of the mind, and constant strengthening is precisely responsible for the sports science's quick development in recent years. They are a crucial source for the advancement of scientific research as well as the quality control of its outcomes. As seen in Figure 2, these researchers typically possess a sophisticated knowledge structure, a sharp sense of invention, a variety of research techniques, and the capacity to understand problems acutely.

Research Grants

In order to develop the necessary motivation for the development of scientific research innovation capabilities, it is necessary to create a variety of conditions from the perspective of economic foundation and material supply, from the motivation of innovation, from the purpose of innovation, and from the factors such as innovative evaluation and incentives ensure the implementat The challenges facing science are currently getting more and more complicated, and innovation activities are likewise getting more and more expensive. As a guarantee, the many links involved demand a sizable financial and material commitment, which is also a requirement for encouraging the transformation of innovative successes. A substantial sum of wealth must be invested in numerous channels to achieve this [7]–[9].

The creative scientific research activities involve some risks, and financial investment is the assurance that the risks will be resisted and the innovative research activities will be implemented smoothly. Scientific research funding, which serves as the economic backbone, dictates the scope and depth of research activity. The investment of ample scientific research money is the assurance for the ongoing advancement of sports-related research and innovation activities, the fuel for creativity, and the foundation for the growth of sports science. There will be a specific amount of cash to match, regardless of whether it is for the National Social Science Office, the Ministry of Education, the General Administration of Sports, or the scientific research initiatives of different provinces, cities, and colleges. Regardless of the amount of funding allocated for both initiatives, it is important to mitigate the risks associated with innovative activities and maintain the healthy and ongoing advancement of both. A type of innovation investment capacity that illustrates the strength of sports' scientific research innovation ability is the collecting of research funding.

Infrastructure

Since scientific research is a process of combining various resources to produce novel results, material conditions must be provided during the initial planning stage to encourage the production and transformation of research findings. The infrastructure of scientific research can be defined as the number and quality of these input material conditions. The infrastructure of sports science research, for instance, consists of books, information sources,

tools, and equipment. Infrastructure is a prerequisite for scientific study and has a significant impact on how well sports research performs.

Operational Capability Innovation

The recombination and usage of scientific research resources to produce new theories, methodologies, and tangible results is the innovation of sports science research. To guarantee that innovation efforts advance swiftly and efficiently toward the defined goals, these activities must be carried out within the confines of specific rules and methods. If there is no good operating ability to guarantee, the ideal combination of scientific research resources will not be obtained, and innovation will not be produced, under the protection of human, financial, material, information, and other resources. An essential component of the capacity of sports scientific research and innovation is the operational ability of innovation, which can fully realize the potential of both. The following four aspects can be used to categorize sports scientific research's capacity for innovation.

Academic Interaction

It is difficult to produce significant findings in current scientific research using solely one's personal hobbies and interests. Results of scientific research generated by individual strength have very little worth. The complexity level of the scientific problems that need to be answered in problem-oriented scientific research is beyond. Academic exchanges can assist researchers in achieving resource sharing and research assistance, just like "three cobblers, top Zhuge Liang," and can help researchers develop innovative thinking and master cutting-edge information. From the standpoint of the advancement of sports science, the innovation of sports science is inseparable from good academic exchanges. To obtain the most recent academic ideas and trends and to enhance the capacity for innovative scientific research, it is crucial to combine the research theories and methodologies of many disciplines.

Control Mechanism

Similar to how a computer works, only the hardware isn't enough to accomplish a task; instead, the hardware must perform fully under the control of software or else it is just a collection of useless parts. Similar to this, scientific research must be conducted under the supervision of specific laws and regulations, whether it involves the combining of resources or the use of a platform. The behavioral links and norms between numerous resources, organizations, and society in scientific research are coordinated by rules and regulations, much way software regulates computers, allowing innovative activities to function healthily and effectively. Despite the fact that technological innovation can fuel economic growth, economist Douglas North emphasized that institutional innovation is necessary to build on technological innovation's successes and ensure long-term economic growth. It has a significant impact on a nation's social and economic development. The control of a reasonable system enables the resolution of social issues resulting from scientific research activities as well as the regulation of scientific researchers' competition and cooperation, the reduction of unexpected factors in innovation activities, and an increase in the success rate of innovation activities. Scientific research activities will stray from their predetermined course under an illogical framework, and it may even stop innovation from happening.

Sports science focuses on "people in sport and people's movements." As a result, particular material conditions are needed, but these conditions ultimately need to be applied to people, whether they are the research subject or the research object. Scientific research innovation is a complicated mental activity that requires a suitable innovation environment and innovation mechanism to establish a good scientific research atmosphere. Additionally, the innovation mechanism needs new measurements and technological advancements. Researchers'

excitement for innovation can be stoked by the sports scientific research innovation system, which also serves to coordinate relationships between various connections and departments and lessen risks and accidents associated with new scientific research. It is clear that creating a rational management system will help sports science develop a rationale order, foster creativity, and increase the effectiveness of scientific research [10], [11].

CONCLUSION

Interdisciplinary research is the process of developing novel insights, theories, and techniques based on the meeting of different fields of study. It also involves interdisciplinary communication and the revision of scientific paradigms. This method replaces the outdated, "discipline-centered" knowledge generating method with a new, "problem-centered" method by integrating the paradigms of several disciplines. To show the need for interdisciplinary research in sports science in China, this study adopts an interdisciplinary methodology based on the general concept of "complexity of sports, comprehensiveness of sports science, intersection of sports scientific research, and interdisciplinary requirements of sports scientific research innovation." The innovation ability is used as the research's beginning point, and after analyzing the pertinent influencing aspects of China's sports scientific research innovation ability, a sports scientific research innovation ability index system is created. The impact of interdisciplinary research on innovations in sports scientific research is examined through qualitative research. By using quantitative analysis, it is possible to explore the internal relationships between the relevant factors in scientific research innovation ability and gain a thorough understanding of the crucial role that interdisciplinary research plays in Chinese sports scientific research innovation.

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CHAPTER 3

ANALYSIS OF ACADEMIC ENGLISH WRITING'S SYNTACTIC COMPLEXITY AND SEMANTIC COHERENCE USING PARTICLE SWARM OPTIMIZATION

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ABSTRACT:

Finding some impartial markers to identify and assess the surface language structure is urgently needed in order to enable language learners more effectively master the target language. Writing is a significant component of measuring language proficiency. Complexity and semantic coherence are seen to be crucial components in the instruction of writing in second languages. In reality, a new intelligent assessment approach is required to resolve them due to the complexity of English writing syntax, which includes a significant number of high-dimensional nonlinear optimization issues. Particle swarm optimization (PSO) is currently used extensively in several domains, including combinatorial optimization, neural network training, and function optimization. This essay explores the semantic coherence and grammatical complexity of academic English writing that is based on PSO. The quantity of phrases is correlated with writing success. The significant syntactic complexity and semantic coherence values for the data mining algorithm, artificial intelligence algorithm, decision tree algorithm, and PSO algorithm when the number of experiments reaches 25 are, respectively, 0.008, 0.003, 0.002, and 0.013, demonstrating that PSO algorithm is the best among them.

KEYWORDS:

Complexity, Impartial, Languages, Semantic, Significant.

INTRODUCTION

In addition to being a crucial component of English instruction, teaching English writing is also one of its challenges. Chinese pupils' written English still has syntactic issues. Chinese academics have finished a number of studies on writing in a second language in recent years while examining the writing abilities of language learners. They discovered that Chinese pupils of all ages exhibit linguistic proficiency. A comparison study of the language features of English writing in Chinese universities and among American college students has been conducted on the qualities connected to oral discourse and the complexity and semantic coherence of simple phrases in their works. The term "complexity" refers to the degree of language use in combination, which typically indicates the volume and subordinate level of use. Syntactic complexity, also referred to as syntactic maturity or language complexity, describes the breadth of a language's output forms and the formal complexity of those forms. The length of output units, the number of sentences that are embedded, the range of structural types, and the complexity of special structures are quantitative goals when expressing syntactic complexity. Writing is a crucial component of language proficiency testing. In order to help language learners become more adept in the target language, it is necessary to establish some unbiased indicators to identify and assess the surface language structure.

Semantic coherence and syntactic complexity are seen to be crucial components of teaching second language writing. Additionally, studies show that complex noun phrases might facilitate the employment of complicated words to convey ideas. Encourage your children to

turn basic, compound, and subordinate sentences into phrases. Because attributives, appositive clauses, and adjective phrases are "noun phrase components" that can lengthen clauses and increase the information density of nouns, we should intentionally use them. The index of subordinate clause usage remains one of the keys to enhancing compositional quality in addition to t unit and clause length. In their written English, Chinese students frequently use short sentences, compound sentences, and a sparse amount of object or adverbial clauses. Through the transformation of sentence patterns in writing instruction, we may assist students develop a syntactic framework for English complicated sentence patterns and master the flexible and appropriate usage of a variety of sentence patterns.

Particle swarm optimization (PSO) is a computer technique used in computational science that attempts to iteratively enhance a candidate solution with respect to a specified quality metric. By using a population of potential solutions, here referred to as particles, and moving them across the search space in accordance with a straightforward mathematical formula over the particle's position and velocity, it solves problems. In addition to being led toward the best-known positions in the search space, which are updated as other particles find better positions, each particle's movement is also impacted by its local best-known position. The swarm should move toward the better answers as a result of this. Initial credit for PSO was given to Kennedy, Eberhart, and Shiite was initially designed to simulate social behavior by stylizing the movement of species in a fish school or bird flock. The algorithm was made simpler, and optimization was seen to be taking place. The book by Kennedy and Eberhart discusses a variety of PSO and swarm intelligence's philosophical facets. Poli conducts a detailed analysis of PSO applications. Recently, Bonyad and Michalewicz presented a thorough overview of theoretical and experimental PSO research.

PSO is a metaheuristic because it can search very huge spaces of potential solutions and makes little to no assumptions about the problem being optimized. Furthermore, unlike traditional optimization techniques like gradient descent and quasi-newton methods, PSO does not employ the gradient of the issue being improved, negating the need for the optimization problem to be differentiable. Metaheuristics like PSO, though, do not ensure that an ideal solution will ever be identified. In practice, there are many high-dimensional nonlinear optimization problems that need to be resolved by a new intelligent evaluation approach because of the intricacy of English writing syntax, for instance. Currently, the PSO algorithm is frequently employed in disciplines such as combinatorial optimization, neural network training, and function optimization. This study examines the syntactic complexity and semantic coherence of English text using the PSO algorithm. The PSO algorithm creates a temporary clonal population through each particle's individual extremum and creates a new population after clonal amplification; Cauchy mutation is applied to population members to increase the population's diversity in order to enhance the algorithm's capacity for global search. The flock of birds is abstracted into "particles" that lack both substance and volume.

The historical motion state information of both themselves and the swarm affects the motion speed of these "particles" through the cooperation and information sharing of the swarm. The historical optimal position of the swarm and the particles has an impact on their current motion direction and speed, which can better coordinate the interaction between the motion of the "particles" and the motion of the swarm. Locate the ideal answer inside the complicated solution area. The quantitative indicator of the population should, to the greatest extent feasible, reflect its evolutionary traits, and the time series of the evolutionary process should follow some rule or pattern. Because the development of a learner's syntactic ability is an essential component of their language ability, her proficiency in the target language is used not only to evaluate language learners orally and in writing and as a gauge of their proficiency, which serves as the foundation for their performance, but also to track the

advancement of language. The changes in syntactic complexity, complexity, and semantic coherence in second language writing or speaking, or syntactic scope, show the acquisition of certain syntactic complexity.

The PSO algorithm uses the concept of label propagation to initialize the population of English writing's syntactic complexity and semantic coherence, and it then employs the comparative mutation strategy to update the speed in accordance with the state quantity of the population extreme value and individual extreme value. The particles in the complexity and semantic coherence population are then updated using the local iterative search approach, depending on the value of. Finally, the population member with the individual extreme value is crossed using the single path crossing technique. There is no direct correlation between syntactic complexity and writing quality because there are good and bad short sentences as well as good and bad long sentences, and the relationship between syntactic complexity and writing quality is also influenced by the subject matter, which is one of the reasons for the decline in syntactic complexity research. Traditional teaching strategies emphasize language form while ignoring language in order to control and limit the likelihood of grammatical errors. The requirements of complexity and change are gradually being highlighted by educators, teachers, and numerous language output evaluation schemes as a result of grammatical complexity.

It should support the researchers' ongoing observation efforts and offer a theoretical framework for interpretation, laying the groundwork for replication, the accumulation of knowledge, and an understanding of significant structures, according to syntactic complexity and semantic coherence. Conduct research on the syntactic diversity and complexity of writing materials; the syntax measurement technique used should account for both. As a result, syntactic complexity is determined by unit length, clause density, and sentence type. The syntax of English writing includes all particles. Both know the optimal location and current position they have so far identified and have an adaptation value of writing syntactic complexity and semantic coherence dictated by the objective function. One could interpret this as the particle's personal flight experience. Each particle in the PSO algorithm is also aware of the optimal placement of every other particle discovered in the entire group of writing syntactic complexity and semantic coherence, which is referred to as the peer experience of particles.

DISCUSSION

State of the Research

In their study of the connection between oral and written register traits and the quality of writing in second languages, Jothi et al. discovered that oral and written register traits are connected to writing quality in many ways. Restrictive clauses in the primary stage, unrestricted clauses and nested phrases in the intermediate stage, noun modifier clauses and multiple prepositional phrases as post modifiers in the advanced stage, according to Zhang et al.'s hypothesis. Jeon et al. noted that students' works have a problem with repetitive language patterns, and the majority of them are short sentences, while long sentences that follow grammatical rules are uncommon. Syntactic complexity indicators can be labeled manually or automatically, according to Chauhan et al., however human labeling has two significant flaws. First off, labeling huge corpora is difficult, time-consuming, and inefficient. Second, subjective factors have a significant impact and are prone to error. By examining the usage of interlanguage phrases in both learners' and native speakers' doctoral theses, Frear et al. were able to confirm their prediction that the complexity of a noun structure does not necessarily correlate with its quality. From the standpoint of syntactic traits, Biber et al. presented an empirical examination of the issues with junior college students' English writing. Findings

show that complex sentences are rarely used and that simple sentences are used more frequently in the composition of high-level and low-level groups. Low-level writers' sentence expression is found to be simpler and less effective, with little variation in sentence structures and single expression forms [1]–[3].

It has a significant impact on writing quality. The majority of syntactic complexity indicators, particularly language length and juxtaposition dimension indicators, may discriminate syntactic complexity at various language levels, according to Joo et al. There are, however, two issues that demand your attention. First, some indicators' ranges are overly broad. For instance, the specific markers of spoken and written language are not divided when measuring clause structure. Second, the quality of the writing may be projected to be worse the higher the value of specific syntactic complexity markers. There is currently no consensus on the measurement dimensions and methods of syntactic complexity corresponding to specific language levels, and whether the stronger syntactic complexity is equivalent to the higher writing quality or language level. Andersen et al. proposed that the composition contribution generally found that the syntactic complexity in writing increases with the extension of learning time and the improvement of language level. According to research by Leikin et al., who argued that the syntactic complexity of English language learners' compositions alters over time, the length index climbed most quickly in grades 1-2 before decreasing for a brief period before increasing again. The density index peaks in grade 2, but there is no discernible development trend and the range of variation before and after is quite tiny. According to Knudson, changes in other features are more noticeable than changes in syntactic complexity over time. The majority of them are sensitive to varied proficiency levels and interested in discovering syntactic structure among various competence groups.

The Research Status of This Method

This paper, which is based on PSO, examines the syntactic complexity and semantic coherence of academic English writing. It is interested in using the syntactic complexity of academic English writing as an index and assesses the effects of teaching interventions, such as teaching plans, writing tasks, writing plans, task types, and so on, on grammar and writing ability. Syntactic complexity is described by the PSO algorithm as "the ability to compress more and more ideas or information blocks into less content." "Subsequent research has demonstrated that this definition is inadequate because it only considers a substantial amount of data. As a result, they include variations in sentence kinds when defining syntactic complexity. Teachers can assess their pupils' progress with clarity and use the PSO algorithm to do so. After some instruction, it is possible to imagine how students' syntactic complexity changes. They can modify and improve the curriculum and create the most efficient teaching techniques based on these findings. Effective teaching strategies to enhance students' language and writing skills. Students should be given ample opportunities for writing practice in the teaching of academic English writing based on the PSO algorithm in order to increase the syntactic complexity of learners' writing. The qualities of written language are highlighted by certain subordinate structures, such as subordinate connectives, relative clauses, nonrestrictive adverbial clauses, and so on. Finally, give students concrete language examples to emphasize the need of not abusing compound noun structure [4]–[6].

The Principle of Particle Swarm Optimization

As soon as PSO was developed, it garnered the interest of many academics in the domains of evolutionary computing, computer science, and management science and produced a significant amount of research findings. PSO is a useful optimization tool at the moment for nonlinear continuous optimization issues, combinatorial issues, and mixed integer nonlinear issues. PSO algorithm has the benefits of quick search times, great efficiency, and a

straightforward algorithm, but it is also prone to premature phenomena and local optimization. As a result, the majority of academics focus their study on combining PSO algorithm with other intelligent optimization algorithms to make the two algorithms complement one another and prevent PSO method from devolving into local optimization. PSO algorithm seeks to find the best answer by inter-individual collaboration, in contrast to genetic algorithm, which is based on Darwin's evolutionary theory of "survival of the fittest, survival of the fittest". A member of a biological group can, at least in theory, profit from the knowledge and understanding that all other members have gained while in search of food in the past. According to this statement, information sharing within biological communities will result in evolutionary advantages, which is the fundamental tenet of the PSO algorithm.

Consider the following scenario: A flock of birds is haphazardly looking for food. There is only one food item present here. All birds are blind to the location of food, but they are aware of their distance from it. In order to record historical quantitative data in real time, create a large number of time series, and supply input data for the function complexity classification model, this study provides a quantitative index to quantify the population features in the evolution process of the PSO algorithm The PSO algorithm can be used to address the majority of function optimization issues, just as other algorithms. These functions are typically quite complex and are primarily characterized by their huge scale, high dimension, nonlinearity, nonconvexity, and no differentiability. Additionally, there are a lot of local optimal solutions. In order to maximize the effectiveness of the improvement plan, it should be as straightforward and useful as feasible.

Complex optimization techniques also make it difficult to summarize and analyze data. Simple optimization techniques are used to hasten program debugging, enhance the controllability of population features, and steer the population as closely as feasible toward the optimum evolution trend. PSO updates the position value through velocity and searches for the best answer in the space of possible solutions. The population's particles are initially chosen at random, and then the best solution within the population is discovered through iteration. Even if the particle is very near to its best position to yet, it nevertheless reflects the particle's capacity for self-learning. The ability of mutual cooperation amongst particles is represented by the third component, which stands for the social cognitive ability that brings the particles close to the population's overall optimal location. An empirical study of syntactic complexity and semantic coherence in writing (PSO algorithm flow chart [7]–[9].

The research on the relationship between syntactic complexity and semantic coherence highlights the competence of writing or language since the syntactic complexity and semantic coherence of writing have been tested in writing. Syntactic complexity and literary quality don't have a strong or direct correlation, but that doesn't mean they are unrelated. The complexity of the syntax has a significant impact on writing. The study of syntactic complexity helps enlighten writing instruction in several ways. Complexity refers to the complexity of sentence structure, which includes clauses, unrestricted verb phrases, compound verb phrases, compound verb phrases, noun phrases, and nominalized sentences. Diversity refers to the variation from complexity to shooting range sentence patterns, that is, the flexible and appropriate use of various sentence patterns. The complexity of the relationship between syntax and language, the language proficiency of second language learners, the process of language development, and the quality of writing have all come into sharp light as a result of the teaching and research of second language writing. Different syntactic complexity measurement indicators are suitable for the evaluation of second language writing at various language levels, and the objective syntactic complexity measurement is not significantly correlated with the subjective manual score. Additionally, the syntactic complexity does not adhere to the "three-stage linear" development law.

As time went on, new techniques for gauging syntactic complexity and semantic coherence were proposed. The author will first define several unit and structural complexity metrics used in syntactic analysis before going into greater detail about these measures. One of the many sentence patterns is the quantitative objects of unit length, unit density, and syntactic complexity frequency. The terms "unit length" and "clause length" relate to the average number of words in the output unit, respectively. The term "T-unit" describes "the smallest unit that contains the main clause, all clauses, and non-clause structures." Numerous research were examined, one of which examined the impact of syntactic complexity and semantic coherence on writing quality as part of an effort to raise mortality rates. The study of writing quality and grammatical complexity of relationships was the other. The fact that T unit and clause length appear to be good indicators of writing quality may be owing to other variables that cause these two components to grow in length. Language output length, coordinate structure, subordinate structure, and nominalization are just a few of the numerous facets of syntax complexity.

These characteristics serve as predictors of the level of writing growth of English language learners. The properties of these syntactic complexity are currently described by more than 40 syntactic complexity measuring markers. Additionally, there is a strong correlation between syntactic complexity and writing quality, or each syntactic complexity index can, to some extent, reflect writing quality. Large-scale data investigations have shown a linear association between it and proficiency. Passive sentences, articles, relative clauses, and compound nouns may be significant structures in relation to the degree of development, according to other successful grammatical complexity assessments. The syntactic complexity and semantic coherence of students' works can be revealed by unit length and clause density. Adjective phrases, adverb phrases, and noun verb phrases are examples of syntactic characteristics. Utilizing these syntactic elements will not only inevitably lengthen units and make clauses more dense, but it will also raise the level of syntactic complexity. Intermediate and advanced English speakers employ less subordinate structure than native speakers, but they also use more compound nouns, sometimes even more than native speakers do. This result calls into question the "three paragraph" syntactic complexity development law. The relationship between grammatical complexity and semantic coherence in writing also has to be reconsidered at the same time [10]–[12].

CONCLUSION

Based on the PSO algorithm, this study examines the syntactic complexity and semantic coherence of academic English writing. The quantity of phrases is correlated with writing effectiveness. When there are 25 experiments, the data mining algorithm has a significant value of 0.008 in terms of syntactic complexity and semantic coherence, the artificial intelligence algorithm has a significant value of 0.003, the decision tree algorithm has a significant value of 0.002, and the PSO algorithm has a significant value of 0.013. The PSO algorithm is the best, as can be shown. Students use more clauses in their writing; syntactic complexity and semantic coherence can predict writing performance; and the number of phrases can significantly predict writing performance. Syntactic length and phrase number are related to writing quality, while syntactic density is not. There are significant differences in syntactic length and the number of phrases between the groups with high and low writing scores. PSO has some illuminating and directing significance for teaching English writing. Students' syntactic complexity and compositional quality will be increased through the teaching of writing strategies such sentence pattern conversion, the usage of complex noun phrases, and verb diversity expression. The PSO algorithm's consideration of syntactic complexity and semantic coherence has an effect on the writing's quality, particularly on the

length index and the quantity of phrases. When teaching writing, teachers should encourage pupils to use a variety of syntactic devices and broaden the range of compositional structures.

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CHAPTER 4

USING DATA MINING TO PREDICT STUDENTS' ACADEMIC PERFORMANCE IN HIGHER EDUCATION: A SYSTEMATIC REVIEW

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ABSTRACT:

Educational institutions have recently experienced several difficulties. One of these issues is the enormous amount of educational data that can be used to unearth fresh perspectives that greatly benefit students, teachers, and administrators. To improve student achievement and learning outcomes, experts from many fields are now increasingly interested in raising the standard of instruction in educational institutions. Numerous studies have been conducted to forecast various levels of student achievement. The majority of earlier research aimed to forecast students' performance at graduation or at a certain course level. This paper's main goal is to highlight freshly released research that can be used to forecast college students' academic achievement. Additionally, this study tries to pinpoint the methods that are most frequently employed to gauge a student's academic standing. Additionally, this study provided a summary of the most important characteristics that were utilized to predict students' academic success, with the goal of assisting both students and policymakers by providing extensive insights into the issue. As a result of their superior performance in numerous earlier investigations, the RF and ensemble models were shown to be the most accurate models. There is a need to address this issue because researchers in earlier studies could not agree on whether or not the entrance requirements have a strong association with students' accomplishment. Additionally, it has been noted that there aren't many studies that use student data from arts and humanities majors to predict academic performance.

KEYWORDS:

Achievement, Enormous, Institution, Performance.

INTRODUCTION

There is a need for analyzing and learning from huge and complex stored datasets as the amount of data being saved rises. In this cutthroat environment, extracting hidden usable knowledge from datasets has become crucial in many fields. Data mining, also known as Knowledge Data Discovery (KDD), is a method for sifting through the enormous amount of collected data to find hidden patterns and extract important, nontrivial information. One of the fields of computer science and statistics that is expanding quickly is data mining. Data mining's strength is its ability to use a variety of approaches that may be used in a variety of industries, including business, engineering marketing, education and health. illustrates the procedures involved in data mining, which is more accurately defined as one of the Knowledge Data Discovery (KDD) process' phases that can be used to detect and uncover intriguing patterns from the recorded data. The preprocessing of the intended dataset is the first step in the many stages of the data mining process. By using the data selection approach to extract a collection of relevant data from the databases, it is vital to concentrate on the problem-related data. The data will be cleaned up and processed during the preprocessing stage to remove any of the problems that prevent it from being used with mining techniques.

After the data has been processed, useful hidden patterns are extracted using data mining techniques. The analysis and evaluation of the retrieved patterns that were found in the previous step are the main goals of the last stage. Appropriate data mining approaches will be employed to measure and analyze the interesting patterns.

Researchers from a variety of disciplines including computing, statistics, and education have recently become interested in studying the academic challenges faced by students at higher education institutions in order to identify viable answers. Educational Data Mining (EDM) is the process of using data mining techniques on academic data. The goal of Educational Data Mining (EDM) was to use various techniques to the vast amount of data gathered from educational institutions in order to comprehend student behavior and significantly enhance the quality of the teaching and learning process. As well as academic grades (course grade and GPA), learning management systems (LMS), demographic information (age, nationality, and gender), and admission information (entry test and high school grade) are all included in educational data. For educational objectives, researchers have used a variety of data mining approaches on educational data. Prediction (classification and regression), structure discovery (clustering), and relationship mining (association rule mining, sequential pattern mining, and correlation mining) are the three most popular data mining approaches.

Numerous scholars have recently developed an interest in educational data mining techniques and carried out several studies that helped to advance the educational process. A number of concerns have been addressed to improve the educational process, such as identifying kids who are at danger of failing or dropping out and projecting academic levels early on to give at-risk children the support they need. This study offers the fundamental understanding of using educational data mining methods to forecast student performance. This study also exposes the gaps and inconsistencies in the earlier studies. This paper's main contribution is to highlight recently released research on academic performance prediction in students. In addition, this essay seeks to provide answers to the following queries: The study of applying data mining, machine learning, and statistics to information produced in educational settings (such as colleges and tutoring programs) is known as educational data mining (EDM). The goal of the area is to advance methods for analyzing this information, which frequently consists of numerous levels of meaningful hierarchy, in order to gain new knowledge about how individuals learn in these kinds of environments.

EDM has thus contributed to learning theories researched by educational psychology and learning sciences scholars The area has been compared and contrasted with learning analytics, which is closely related to it. Educational data mining is the use of methods, devices, and research to automatically glean information from enormous databases of data produced by or connected to students' educational activities. This material is frequently extensive, detailed, and accurate. When a student accesses a learning item, the number of times they access it, and the length of time the learning object is shown on the user's computer screen are all tracked by various learning management systems (LMSs), for instance. Another illustration is the fact that whenever a student provides a solution to a problem, data is recorded by intelligent tutoring systems. The information they gather might include the date and time of the submission, whether the actual solution matches the expected one, how long it has been since the last submission, how the solution's component parts were entered into the interface, etc. Because of the accuracy of this data, even a brief computer-based learning environment session (such as 30 minutes) may provide a significant amount of process data for analysis.

Other times, the data is of a coarser texture. For instance, a student's university transcript might include a chronologically arranged summary of the courses they've completed, their grades in those courses, and the dates they chose or changed their academic major. EDM

makes use of both forms of data to learn important things about diverse learner types and how they learn, the organization of domain knowledge, and the impact of instructional tactics incorporated into various learning environments. By looking at the raw data alone, it would be challenging to decipher the new information provided by these studies. For instance, a correlation between a student's final course grade and the learning objects they accessed during the course may be found by analyzing data from an LMS. Analyzing student transcript information might also point to a connection between a student's grade in a particular course and their choice to switch majors. When considering how to connect with, provide, and manage educational resources, students, teachers, school administrators, and decision-makers in the field of education can all benefit from knowledge about how learning environments are designed. Humans can draw conclusions from data that may go beyond what an automated data mining tool can. Data is distilled for human judgment for the two main functions of identification and classification in the usage of education data mining.

Data is distilled for identification so that people may spot well-known patterns that might otherwise be challenging to decipher. A pattern that amply illustrates the relationship between learning and experience across time is the learning curve, a classic in educational research. Additionally, data is distilled for the classification of data aspects that help the creation of the prediction model in educational data mining. The classification process greatly speeds up the creation of the prediction model. In order to comprehend the vast volumes of education data and help decision-making, this approach aims to synthesize and present the information in a meaningful, interactive, and visually appealing manner. This approach helps teachers comprehend utilization data and the efficiency of course activities in particular. The identification of trends in student learning, behavior, and chances for collaboration, as well as the labeling of data for future uses in prediction models, are important applications for the distillation of data for human judgment.

DISCUSSION

Data Gathering

The process of obtaining and collecting educationally relevant data that is kept in the repositories of educational institutions is known as data collection. Higher education institutions have amassed a substantial amount of information about students ever since they enrolled in a university program. Students' information about program enrollment requirements, such as high school graduation, Scholastic Achievement Admission Test (SAAT) results, and General Aptitude Test (GAT) results, is gathered. Students' majors and course grades are among the data that are gathered while they are enrolled in the program. One of the student data sources is the Students Information System (SIS), which stores a variety of student-related data, including demographic data (age, gender, and nationality) and academic performance (grades from high school and college). However, because they are gathered by a method like a questionnaire, social and economic attributes data are not included. In addition, data can be gathered about a student when they are utilizing an online learning management system (LMS), such as Blackboard, to access course materials and grades, take part in discussions, and complete online tests and assignments. The aforementioned information was gathered from the on-campus educational experience. It has been noted from earlier studies covered in section 4 that the majority of the examined studies constructed a prediction model to establish a student's level at higher education using academic performance and demographic data.

Preparation of Data

The preprocessing stage is crucial to data mining. The main objective of the data preparation stage is to make the raw data appropriate for the application of data mining techniques. The

vastness of educational databases makes it common for the data housed there to have issues that degrade the quality of the data. Data cleaning techniques must be used to deal with missing, inconsistent, and outlier data in order to improve the quality of the data. Data preparation raises the quality of the data, which enhances mining outcomes. This section explains the fundamental techniques for preparing data, where noise can be eliminated and missing values can be handled. Data integration is the process of combining information from various sources and storing it in one place. By deleting the redundant and irrelevant information from the dataset, data reduction can be used to minimize its size. Data transformation, on the other hand, can be used to scale the data into a smaller range. The following tasks are carried out during the preprocessing step to improve the performance and precision of the prediction model. It depends on the dataset and none of the aforementioned processes are required.

Data cleaning: It is necessary to clean up stored data because it frequently has issues including inconsistent, noisy, and incomplete data. Data cleaning makes an effort to complete missing numbers, find outliers, and get rid of noise. Missing data are those that are incomplete and can be fixed by removing the tuple (when the target label is absent or when the tuple has many missing values), replacing the missing value in the numeric attribute with the mean, median, or mode of the attribute, and replacing the missing value in the nonnumeric attribute with the mode (most frequent) value of the attribute. The binning techniques, such as smoothing by bin means, smoothing by bin borders, and smoothing by bin median, can be used to eliminate noisy data, often referred to as random mistakes. Finding an anomalous item that behaves differently from other objects is the process of detecting and removing outliers. Graphical representation techniques like boxplots and unsupervised learning techniques like clustering can also be used to find outliers.

Data blending: It is the process of combining several data sets from many sources, including various databases and files, in order to do data analysis. The same variable may occasionally appear in multiple data sources under various names. When data sources are combined, a data redundancy (data duplication) issue arises. In datasets where there may be duplicate values for two different attribute names, data redundancy is a prevalent issue. Additionally, data integration results in inconsistent data when the same feature is measured in various ways across several databases (for instance, the first database maintains weight in kilograms while the second database keeps weight in pounds). Another challenge in the data integration process is the use of various data encoding, such as the gender attribute's value in the first database ("male" or "female") and in the second database ("M" or "F"). Several strategies will be used during this phase to deal with these contradictions and duplicates [1]–[3].

Data compression: The main goal of using data reduction techniques is to obtain a smaller version of the original dataset that generated either better or nearly identical analytical results. The data reduction stage took into account a number of methodologies, including data compression, dimensionality reduction, and numerosity reduction. Numerosity reduction is the process of replacing the original data volume with smaller versions of the data, and both parametric and nonparametric models were employed. While dimensionality reduction uses a variety of data compression, feature selection, and feature building strategies to reduce the amount of dataset features. Data compression involves transforming and compressing the original data to create a smaller representation (compressed data). Data reduction is considered lossless when the original data can be restored from the compressed data without losing any information. In the absence of this, it is referred to as lossy data reduction, in which the recovered data are roughly equivalent to the original data.

Data transformation: The data is changed into a different format during the data transformation process so that it can be used for data mining. Applying data transformation

significantly contributes to increasing mining process efficiency and facilitating pattern recognition. Among the methods of data transformation that are frequently employed are normalization and discretization. A common technique is normalization, which reduces the data range of the original attribute's values. The values of numerical attributes, such height, are replaced with nominal values, like tall, medium, or short, using data discretization techniques.

Data Mining Framework

The two main goals of data mining are descriptive and predictive analysis. Without the class property, descriptive analysis is used to mine data and offer insightful information about recent or ongoing events. It is often referred to as unsupervised learning methods, such as association pattern mining and clustering. To gain insight into data, clustering is the process of dividing things into various categories. Clustering is a sort of learning that is distinct from classification and regression since it makes use of unsupervised learning strategies. Unlabeled training datasets were utilized in the clustering algorithms to classify the items into groups by increasing similarity between objects in the same group and decreasing similarity between objects in other groups. The rule will be extracted from the frequent itemset that meets the stated criteria (the value of minimum confidence is greater than a predefined threshold), after the association rule mining technique uncovers the intriguing hidden relationship between the attributes where the frequent patterns are initially generated [4]–[6].

By using historical data to inform the choice, predictive analysis is frequently used to estimate unknown or future values. The two most common supervised learning methods for prediction are classification and regression. These methods rely on the model learning from the training labeled dataset to predict the label or value of the unlabeled testing sample. A common supervised learning technique called classification links a specific input to a categorical target class. Regression, however, links a specific input to a continuous outcome.

Evaluation of the Classification Model

The evaluation metrics that are frequently used to gauge the performance of the classifier are introduced in this section. The evaluation of the prediction model will use test samples that weren't involved in the model's creation. The original dataset is typically split into training and testing parts that are independent of one another, with the training set being utilized to fit the model. In contrast, the performance of the developed model is assessed using unobserved testing samples. When working with enormous datasets, researchers separate the data into three groups: training, validation, and testing sets. The validation set is used to find the ideal value for the hyperparameters while the training set is utilized to construct the prediction model. The model's performance is compared and evaluated in the third set, which is utilized for testing. The most often used techniques for data partitioning are holdout, random subsampling, and cross-validation.

The original dataset is split into a training set and a testing set at random using the holdout method. The size of the dataset affects the partitioning percentage. In random subsampling, the holdout method will be repeated several times, and the final accuracy of the model's estimation is the average accuracy of all the iterations. Typically, 70% of the data are used for training to derive the prediction model, and the remaining 30% are used for testing where the model's accuracy is estimated [7]–[9].

Cross-validation is also widely used in conjunction with parameter tuning techniques. The dataset is randomly divided into k equal folds/subsets for cross-validation, where the training and testing are applied k times each. One-fold is used to estimate the performance of the prediction model, and the remaining one fold is used to fit the model in each iteration. When

working with a tiny dataset, leave-one-out cross-validation is employed as a specific case. The n-fold dataset is divided into n folds. One sample is used for testing and the remaining portion is used for training in each iteration. Stratified partitioning is often advised when the class distribution of the samples within each partition is roughly similar to that of the original dataset. A common tool for evaluating models for classification issues is a confusion matrix. The confusion matrix demonstrates the proposed model's ability to differentiate samples from various n classes, where n 2. False Positive (FP) and False Negative (FN) refer to samples that were incorrectly classified, whereas True Positive (TP) and True Negative (TN) refer to samples that were correctly classified. The confusion matrix can be used to define the widely used evaluation model, which assesses precision, sensitivity, accuracy, and F1-score [20] as follows:

Survey Techniques

The methodology used in this research is centered on current studies that have been released in the past five years up until the beginning of April 2022. The primary objective of this study was to review the published studies that make use of educational data mining methods to forecast students' performance in higher education. As this research concentrated on predicting student academic achievement during traditional (face-to-face) learning, some papers that examined predicting student academic performance during distant learning were ignored. The use of a set of keywords to conduct searches in particular databases, such as IEEE Xplore, Scopus, ACM Digital Library Journals, Google Scholar, and Web of Science, was taken into consideration. (Predict or forecast or identify), (at-risk student or student or first-year student), and (machine learning or data mining) are some examples of the search phrases used to search the databases. Following the acquisition of a number of closely connected papers, the studies that resulted were divided into various categories in accordance with the intended study goals. Additionally, the earlier research within each category was categorized according to the chronological order shown in the next section. The review process employed in this paper. Student Academic Performance in Higher Education: Prediction

Over the past few years, a number of studies on educational data mining have been done. These earlier studies had a variety of goals in mind, including forecasting student dropouts as well as measuring course success, graduation success, and academic performance at the end of the academic year. As a result, the literature review is dependent on the goals of the research. The research completed in the preceding five years to forecast students' academic performance using various educational data mining approaches are summarized in this section [10]–[12].

Estimating Student Dropout Rates

authors in the references. made predictions about the students' performance and likelihood of dropping out. Researchers identified the trends that help keep at-risk students from dropping out in Ref. This study used a decision tree (DT) for classification and a genetic algorithm (GA) for feature selection to determine whether or not the learner would elude detection. The dataset, which consists of 12,969 examples gathered from 106 undergraduate courses, was used to test the suggested model. The findings revealed an average accuracy of 98%. Additionally, they discovered that dropout rates are higher for students who have been enrolled for longer than a year and have a grade point average (GPA) of less than 5.79 (10 scale GPA). Additionally, a team of researchers in Ref. [22] put forth a stacking ensemble model that integrates RF, extreme gradient boosting (Boost), gradient boosting (GB), and artificial neural networks (ANN) to forecast the student who may be at danger of failing a certain course. We used 261 student samples and 12 attributes that were gathered at

Constantine the Philosopher University in Nitra between 2016 and 2020 for this investigation. In this study, a variety of factors important to students' academic progress were taken into account, including data on access, exams, projects, and grades for exams, projects, assignments, and results. The stacking ensemble model that was suggested had the best performance, with an accuracy rate of 92.18%.

Similar to this, the random forest (RF) method has been used in reference to pinpoint the important factors that contribute to student dropout. The significance of each attribute was determined by the authors in Ref. using mean decrease accuracy (MDA) and mean decrease Gini (MDG) measurements. The proposed dataset consists of the records of 206 first-year informatics engineering students and 40 features, such as the students' academic performance in their first semester, test scores from their academic institutions, and demographic factors. Only seven features related to the academic factors from the first semester and the parents' income were chosen to create the final model after the feature selection process. The DT classification technique was used to construct the suggested prediction model. The final DT classification model overfitted, achieving 97.21% training accuracy and 81.01% testing accuracy.

In addition, using data gathered from 561 undergraduate students via an online survey and the clustering method, researchers in Ref. identified students who are more likely to drop out. The authors' categorization method of choice was Bayesian profile regression (BPR). They discovered that the greatest group of students at risk for dropping out had low exam scores, had low motivation levels, struggled with understanding and learning, and had the capacity to overcome hurdles. Support vector machine (SVM), naive Bayes (NB), and DT were merged by a team of researchers in Ref. to create an ensemble model. The suggested model identifies the student who might be in danger of dropping out. In this study, 50 qualities and the replies of 499 students to a questionnaire were evaluated. The study took into account several aspects related to students' academic progress, as well as behavioral, demographic, and social difficulties. The proposed ensemble model, which is 99% accurate, had the best performance. They discovered that the percentage from the prior semester had the greatest bearing on students' academic success.

Based on the first-year courses, a different study [26] created two models to predict student achievement and major. The initial model was created to forecast whether a student will finish the course of study or not. The second model, in contrast, was designed to use data from the first-year courses to forecast which of the 71 majors the student will enroll in. To create the prediction model, three variations of the RF method and logistic regression (LR) have been assessed. The proposed model made use of a dataset for the grades of 65,000 students that was acquired from Toronto University. After preprocessing, the first prediction model was trained using the grades of 38,842 students, with 26,488 of those students' records being categorized as program completion and 12,294 as program dropouts. Only 26,488 student records that have been designated as having finished the program are utilized to train the second model, which predicts the student's major. The common RF package in R produced the best results out of the three RF versions, predicting a student's major with a 47.41% accuracy rate and program completion with a 78.84% accuracy rate, respectively. They discovered that the RF outperformed the LR in terms of results.

A predictive model was provided in a study in Ref. that was trained and tested using 10,196 student records. 41 features total, including first-semester performance, secondary school achievement, and student demographic features, are included in the dataset that was gathered. Gradient Boosted Trees (GBT), extreme Gradient Boosting (XGB), and ANN were assessed as three machine learning algorithms to predict whether or not students will drop out at the end of the academic year. They discovered that the best predictive model, which used ANN

and took into account the academic performance data from the first semester, had an accuracy rate of 85.8%.

CONCLUSION

Due to its huge impact on raising students' academic levels by applying various educational data mining approaches to provide the crucial support for difficult students, predicting student accomplishment is quickly becoming one of the most alluring study subjects. This study adds to the literature in a variety of ways since it conducted a systematic analysis of earlier studies that sought to forecast students' academic performance in higher education. In order to forecast students' academic success, a number of studies in the educational disciplines have used data mining approaches. Various groupings of prior studies have been organized based on the specific study goal. The primary objective of this paper is to draw attention to the current gap in the studies under evaluation. In order to find the gap and respond to the issues above, 45 research in total were reviewed for this paper. It was noted that the majority of the studies that were assessed had an emphasis on researching scientific fields. The fact that the humanities disciplines received so little attention shows how important this major is to study. The DT, NB, ANN, SVM, KNN, and LR were considered as the most used strategies for predicting and identifying student levels, however the RF and ensemble method demonstrated the best performance and results. In addition, earlier studies used a variety of methodologies. Numerous research studies that have been published in this area used a variety of variables to predict student levels, but it turns out that academic variables like CGPA, assessment marks, and admission requirements are the most influential in predicting student achievement, followed by demographic variables. The main drawback of this research is that it only included studies that were published within the last five years, concentrated on studies that predicted academic performance of students in traditional (face-to-face) learning environments, and excluded studies that predicted academic performance of students in distance learning environments. In addition to studies that focus on forecasting the students' performance using deep learning techniques, researchers should also take into account studies that focus on predicting a student's academic achievement while enrolled in a distant learning program.

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CHAPTER 5

ENHANCING STUDENTS' ACADEMIC PERFORMANCE IN FINANCIAL ACCOUNTING CONCEPTS THROUGH PEER TUTORING

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ABSTRACT:

This study looked into how well students learned financial accounting concepts in school by using peer tutoring as an instructional approach. A 2 2 3 factorial matrices nonrandomized pretest-posttest control group quasi-experimental design was used. In secondary schools in Southern Nigeria, 137 pupils were purposefully chosen from eight whole classes to make up the research sample. While the control group was exposed to the traditional lecture style, the experimental group chose a peer tutoring instructional strategy. Data for this study were gathered using the Financial Accounting Achievement Test, Teachers' Instructional Guides on Peer Tutoring, and the usual technique. Results showed that compared to the traditional lecture method, peer tutoring is a more effective instructional strategy for raising students' academic progress in financial accounting concepts. The results of this study also demonstrate that the experimental approach was responsive to socioeconomic position rather than gender. In light of this finding, the study advises post-basic school teachers to teach financial accounting lessons in secondary schools using the peer tutoring instructional technique in order to increase students' proficiency in the topic.

KEYWORDS:

Accounting, Control, Financial, Instructional.

INTRODUCTION

Every civilization relies on education as a key instrument to change its members into more useful, competent, and self-reliant individuals and to instill in them the necessary skills, competencies, and capacities to function in the community. The main objectives of education in Nigeria at all levels are the development of suitable skills, competencies, and physical and mental talents as a means of enabling a person to be highly productive and to give their fair share to the improvement of society. In Nigeria, these educational goals are covered at the basic, secondary, and postsecondary levels of instruction.

is first mentioned among the Egyptian scribes, but until the contemporary period, most skills and vocations were passed down through families or through apprenticeship, with training generally done on a personal basis. The top classes preferred private house tutoring in classical antiquity whereas the lower classes could afford instruction in ludic, or group settings. Some aristocratic teachers in ancient China, such as Confucius and Mencius, attracted so many pupils that their theories became well-known. While Socrates offers comparable services for free while criticizing the sophists for their alleged disregard for actual truth and understanding in Plato's works, some sophists in ancient Greece built successful careers teaching the crucial skills of public speaking for the assembly or courts. In the case of the ancient Romans, Greek slaves frequently provided the patricians and rich plebeians with education. Future kings and queens' personal teachers have long held a prestigious and important position in society. One of the three great lords of the royal court of

the ancient Chinese Zhou dynasty in particular was the Grand Tutor. The relevance of these posts persisted into the modern era in East Asia.

According to some estimates, the methods of tutoring only started to become more structured after the 20th century due to concentration and specialization in tutor training, tutoring use, and tutor evaluation. With the fast expansion of conventional education starting in the 20th century, tutoring has become more and more popular as a way to enhance formal education. For effective indoctrination of principles, fundamental concepts, skills, and competencies needed for useful living and self-reliance to those whose education is terminated at the secondary school level and preparing those who want to continue to the tertiary level, teaching and learning at the secondary school echelon should be practice-oriented. The Federal Republic of Nigeria permitted the inclusion of vocational subjects in all secondary schools due to the importance of education to Nigeria's growth in all domains. Due to this, financial accounting was added to the list of vocational topics offered in senior secondary schools. The goal of this initiative was to provide students with the relevant skills, information, and competence needed for independence, lucrative job, and the growth and development of the nation.

Financial accounting, according to Asali, is the act of gathering financial data from a company and reporting it to both internal and external customers for use in decision-making and appropriate evaluation. Additionally, it is the act of gathering, documenting, summarizing, analyzing, and reporting the monetary value of a company organization as well as giving consumers access to financial data for potential future investments. Financial accounting is mainly a course that deals with the acquisition, management, and keeping of corporate transaction records, according to Abbey and Tokoroa. The objectives of including financial accounting as a subject in Nigerian secondary schools, according to Inuwa et al, are to give students the opportunity to value basic accounting practices, principles, and applications to cutting-edge business activities that will prepare them for future engagements in the field (see Based on its capacity to offer the foundation for the trained workforce required for accounting and associated professions, several experts agreed that accounting is extremely important to the nation's economy.

Despite the admirable and lofty goals of financial accounting and its enormous importance for personal and societal growth, secondary school students' long-term learning outcomes in accounting concepts require improvement, especially in national exams. Similar to this, Odile et al. expressed their opinion that students' academic performance in the topic has not been particularly encouraging, especially at the secondary level of schooling. Furthermore, Onyali et al. asserted that despite the government's unceasing efforts to promote learners' achievement, incidents of students' poor academic achievement in mathematical subjects like financial accounting persist. For this reason, it is necessary to identify philosophical approaches to enhancing students' learning outcomes in financial accounting.

According to Nwankwo and Okorocha, due to its procedural and ordered nature, financial accounting is a subject that cannot be fully understood by rote learning and memorizing of basic concepts and principles. Instead, it requires strong theoretical understanding and intensive practice in order to be applied. According to Umar and Abdulmutallab, the traditional style of teaching in Nigerian classrooms has been the lecture. Because students are not actively involved in the teaching and learning process and must rely on their teachers for their educational needs, the conventional (lecture) method of teaching may not be an effective instructional strategy for raising students' achievement in skill-based subjects. In light of these developments, research on effective teaching methods to promote students' understanding of accounting concepts in secondary schools is necessary to ensure that students are sufficiently prepared for both internal and external exams.

The value of the peer tutoring instructional technique, according to Melero and Fernandez, Rudland and Rennie and Flores et al, involves enhancing students' academic achievement, communication ability, and eagerness to learn. Additionally, it fosters responsibility and increases confidence. Because they feel more linked to their peers when studying students are more engaged in their studies when they collaborate with other peers. Additionally, it gives them the ability to collaborate, offer and accept feedback, and evaluate their learning activities Peer tutoring, in its most basic sense, refers to a learning environment where students collaborate and learn from one another on an equal footing without exercising authority over any particular learner, in accordance with the philosophy that "students learn a great deal by explaining their ideas to others and by participating in activities in which they can learn from their peers. Peer tutoring maintains intellectual growth and enhances academic and social abilities for both the tutor and the tutee. Peer tutoring is one of the learner-centered strategies, according to Inuwa et al. and it is a successful strategy to raise students' academic attainment and other relevant learning outcomes. Slow learners who were taught biology topics utilizing the peer tutoring instructional strategy outperformed those who were taught using the expository method, according to a study by Azubuike.

Numerous research confirmed the relationship between gender and secondary school students' learning outcomes, particularly academic achievement. In a similar vein, Kyei and Apam discovered that male students in Ghana's Upper East Region performed better on senior high school mathematics examinations than female students. Given the aforementioned, it is necessary to determine the relationship between gender and students' success in financial accounting. In addition to gender, socioeconomic position is a factor that may influence students' learning results in the teaching and learning of accounting. According to Guo and Harris in, socioeconomic background refers to a family's position within a society as determined by its wealth, influence, history, and notoriety. The academic skill development of children from low social economic status (SES) households and communities was not comparable to that of children from the higher socioeconomic status group, according to Rathe and Sharma. The results of this discussion should show how effective peer tutoring is for students taking financial accounting in the chosen secondary schools.

It was essential to examine the effectiveness of the peer tutoring instructional strategy on students' academic achievement in financial accounting concepts while taking gender and socioeconomic status into account as confounding variables due to the dearth of research on the effectiveness of peer tutoring in accounting-related fields. Peer tutoring has been shown to improve students' academic performance in financial accounting concepts in Ondo State, Nigeria, but research by Moliner and Alegre on the impact of peer tutoring on students' mathematics self-concepts in middle schools suggested that future research should examine the effectiveness of this teaching method across different countries and within different instructional settings.

DISCUSSION

Applying contemporary methods to the delivery of financial accounting teaching aims to raise educational standards as well as students' self-assurance, independence, and control over financial accounting ideas and. Peer tutoring is a successful educational method that improves student engagement and allows them to learn from one another. Peer tutoring is a strategy that helps students develop their social and academic skills. According to and it is an educational technique that uses peers to deliver one-on-one training and extensive explanations of ideas. Peer tutoring is an effective educational method that offers both the tutor and tutee tasks and makes peers dependent on one another. It offers emotional support and aids in social skill development for students. The academic performance, communication

abilities, and eagerness to learn of students are all improved by the peer tutoring instructional technique. Additionally, it fosters responsibility and increases confidence [1].

Peer tutoring has been described by academics as a collaborative technique that links students with similar academic goals. According to Moliner and Alegre these objectives are met in a setting where learners do not have any interpersonal connections to their level of academic competence. Each pair of pupil's alternates playing the roles of tutor and tutee. To learn more, tutees quiz their tutors on academic subjects Since academic tutors have greater academic achievements than their tutees, their primary role is to support their students and respond to their responses as they learn. This teaching method benefits both the tutor and the tutee. The benefit of being a tutee is that you get personal instruction from a peer. Since they have a similar exposition and a better understanding of the learning material, tutees are typically more at ease when asking questions of the tutors. Tutors also have an advantage since when they respond to tutees' inquiries, their own expertise grows. As all students participate in the learning process, relationships between tutees and tutors support participatory learning and encourage learner involvement [2]–[4].

In the most recent studies the impact of the peer tutoring instructional technique on students' learning outcomes in related subjects is extensively documented. AbdulRaheem et al. conducted a significant study that looked at the effects of peer tutoring and gender on students' academic performance in economics. Peer tutoring was successful in raising students' achievement in secondary school economics, according to AbdulRaheem et al. In a related study, Ogundola used an experimental study of a quasi-type to assess the impact of peer coaching on students' success in technical drawing. Ogundola noted that the peer tutoring instructional strategy was superior to the traditional teaching strategy in terms of raising students' academic achievement. In the context of Spain, Moliner and Alegre investigated the impact of peer tutoring on middle school pupils' perceptions of themselves as mathematicians and reported mathematically significant developments for the grades subjected to peer tutoring.

The Financial Accounting Achievement Test (FAAT), Teachers' Instructional Guide for Peer Tutoring Instructional Strategy (TIGPTIS), and Teachers' Instructional Guide for Conventional Lecture Method (TIGCLM) were the three instruments used in this study. The researcher created the TIGPTIS and TIGCLM to direct teachers in the experimental and control groups, respectively. To ensure adherence to the research methodology, this was done. Experts from the Department of Business Education (accounting option), University of Nigeria, Nsukka, evaluated the instructional guide. The tools were enhanced using the opinions and suggestions of the specialists. There are two portions of the FAAT: A and B. The respondent was asked for personal information in sections A and B. Section A asked for information about the respondent's gender, class, name of school, parents' educational background, parents' occupation, and parents' monthly income. Section B featured 30 multiple-choice questions that were modified from earlier WASSCE questions. The FAAT included three topics: manufacturing accounts, depreciation of fixed assets, and accounts for nonprofit organizations. Using Kuder-Richardson Formula 21, FAAT reliability was 0.83 [5]–[7].

Experimental Technique

The treatment and data collection process was divided into four main phases and lasted for eight weeks the first week was used to train the research assistant, the second week was used to administer the pretest, the third week through the seventh week was used to apply the treatment to the experimental and control groups, and the eighth week was used to administer the posttest. The researcher conducted the experiment according to Eze et al.'s guidelines in

the first week, which included educating the teachers who served as research assistants on the essential course of action prior to the start of the experimental activities. The research assistants gave the participants in the experimental and control groups the pretest in the second week to gauge their skills prior to the start of the experimental activities. Seven weeks were spent on the treatment. The school timetable was followed for teaching during the regular school day. For five weeks, the students received instruction once every week for 80 minutes. To lessen the Hawthorne effect that would be introduced if the researcher administered the test, a posttest was given to the participants in the two groups in the eighth week by the classroom teachers. The study's hypotheses were tested using information gathered from the experimental and control activities.

The performance in the experimental groups across gender and socioeconomic level was shown using descriptive statistics like mean and standard deviation Analysis of covariance (ANCOVA) was used to test the hypotheses at the 0.05 level of significance. Therefore, when the value reached a threshold of significance larger than 0.05, the null hypothesis of no significant effect was upheld. On the other hand, when the value reached a level of significance lower than 0.05, the null hypothesis that there was no significant effect was not supported. Because it would allow the researcher to investigate the impact of the independent and confounding variables on the dependent variable, Ige and Hallel hypothesized that ANCOVA is an important statistical technique for analyzing the data gathered in an experimental investigation. The confirmations by Ting that it contains a stratification element and Ige that ANCOVA partials out the initial inconsistencies in the pretest scores support the use of ANCOVA in this investigation.

The amount and direction of the differences between the groups with significant effects were also determined using the estimated marginal means (EMM). Additional post hoc Bonferroni analysis was conducted to pinpoint the causes of significant differences when they were present. Statistical Package for Social Sciences (SPSS) 25.0 was used to analyze the coded data. This study tested if using peer tutoring instead of the more traditional lecture style would increase students' understanding of financial accounting principles. The major impact of treatment on participants' understanding of the financial accounting topics chosen from the financial accounting syllabus, or hypothesis 1, was the focus of the first strand of analysis. Following the treatments given to the experimental group, the participants' understanding of financial accounting concepts increased. Peer tutoring participants improved more in terms of understanding financial accounting topics. This outcome demonstrates how peer tutoring has a positive impact on participants' academic performance in financial accounting [8]–[10].

The effectiveness of the peer tutoring instructional technique might be linked to students' active participation in the learning process, according to Okoye. Peer tutoring gives students the chance to express their thought process in a way that the other students can understand it, while still remaining under the teacher's supervision in the classroom. The participants asked questions of the professors who took part in the experimental activities and openly voiced their ideas. In a similar spirit, Melero and Fernandez, Rudland and Rennie and Flores et al. said that enhancing students' academic performance, communication skills, and excitement for learning are important aspects of the peer tutoring instructional technique. Additionally, it fosters responsibility and increases confidence. This finding is consistent with those of AbdulRaheem et al. who found that students exposed to the peer tutoring instructional strategy outperformed those who were instructed using the traditional lecture method in the subjects of economics, technical drawing, mathematics, basic science, and home economics. This finding is also consistent with that of Moliner and Alegre, who investigated the impact of peer tutoring on middle school students' conceptions of themselves as mathematicians and

reported arithmetically significant results for the experimental groups exposed to peer tutoring.

The second hypothesis proposed that participants' understanding of financial accounting concepts would not be significantly influenced by their gender. The results of the data analysis used in this study revealed that there was no appreciable difference between the postattainment scores of participants who were male and female in terms of understanding financial accounting principles. This result is consistent with the findings of a study by Ige and Hlalele which concluded that gender had no bearing on students' academic achievement in civic education concepts. The results of Chinwuba and Osamuyimen and Adewale and also support this conclusion, finding that gender did not have a significant main effect on students' achievement in accounting, biology, social studies, mathematics, and economics, respectively. The study's findings on the effect of gender on students' academic performance in financial accounting concepts suggest that the peer tutoring instructional technique is helpful for educating both male and female students, i.e., it is not prejudiced against either gender. This result was in opposition to Ige's conclusion, which said that gender had an impact on students' academic achievement in ICT concepts in social studies.

The participants' understanding of the principles of financial accounting was significantly influenced by their socioeconomic background. The results show that students from high SES backgrounds had the greatest achievement mean score (= 19.88), followed by students from intermediate SES backgrounds with an achievement mean score of = 19.44, while students from low SES backgrounds had a lower achievement mean score (= 19.11). This suggests that kids from high SES achieve more than those from middle and low SES. This result is consistent with those reported by Ebong who reported in their respective studies that students from high socioeconomic status are found to perform better than students from middle and low socioeconomic status because family standard is one of the predictors of the child's future achievement.

Students' gender and treatment do not interact in a substantial way to affect how well they understand financial accounting topics. Due to the fact that both male and female study participants had an equal chance of success, it follows that the peer tutoring instructional technique is not gender-sensitive. This gender-related finding is consistent with those obtained who found no statistically significant interaction between treatment and gender on students' learning outcomes in biology, financial accounting, technical drawing, and English, respectively. This suggests that peer tutoring's relative effectiveness was consistent across gender groups. Another major finding of this study is the interaction effect of socioeconomic status and treatment on students' understanding of financial accounting concepts. This result contradicts those of Edinyang et al, who found that the impact of socioeconomic status and treatment on students' performance and retention in social studies was minimal. This suggests that students' learning outcomes for financial accounting concepts were influenced by the interaction between the therapy kids received and the socioeconomic status of their parents.

CONCLUSION

The impact of the peer tutoring instructional technique on students' academic progress in financial accounting topics was the main subject of this study. The results of this study have given empirical evidence that peer tutoring is more effective than traditional lectures at raising students' academic proficiency in financial accounting concepts. This is due to the fact that in a peer tutoring class, students actively participate in the learning process, it allows the teacher to delegate control to the students in the classroom while still actively guiding them, and it gives students the chance to clearly communicate their ideas to the other tutees. Contrarily, because of the students' passivity during the learning process, the traditional

lecture technique of delivering financial accounting teaching did not produce the desired results. Traditional lecture methods encouraged students to rely on teachers for information transfer, which is harmful to healthy memory growth and may result in subpar academic performance in financial accounting. Additionally, SES interacted with the therapy on students' academic accomplishment while gender of the students had no interactive effect with the treatment on students' academic achievement in financial accounting concepts. In light of this finding, the study suggests that post-basic schoolteachers be urged to adopt peer tutoring as a method of providing financial accounting classes in secondary schools in order to raise students' achievement in the subject. Additionally, educational authorities should set up workshops and conferences to help financial accounting professors learn about the peer tutoring teaching method. Furthermore, when using peer tutoring instructional methodologies, teachers should take the socioeconomic situation of the pupils into account. Researchers in education should be aware that the results of this study are restricted to 137 students in senior high school II who studied financial accounting and were chosen from eight secondary schools in Southern Nigeria. To assess the efficacy of the peer tutoring instructional technique, the researchers recommended that additional study be done in fields that are related.

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CHAPTER 6

ACADEMIC HEALTH CARE SYSTEM: PANCREATICODUODENECTOMY NOT RELATED TO THE OUTCOME

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ABSTRACT:

If smaller and lower volume hospitals adopt the know-how and delivery systems of high volume centers, they can achieve surgical outcomes comparable to big volume facilities. Setting. Moffit-Long Hospital (ML), an academic tertiary care facility; Mount Zion Hospital (ZION), a community hospital; San Francisco County General Hospital (SFGH); and Veterans Affairs Medical Center of San Francisco (VAMC). Patients. 369 people who underwent pancreaticoduodenectomy at hospitals connected to University of California, San Francisco (UCSF) between October 1989 and June 2003. Interventions. Design of a pancreaticoduodenectomy. review of a chart in the past. Data for SFGH, VAMC, and ZION were merged (Small Volume Hospital Group; SVHG) and compared against data for ML in order to account for the potential confounding effect of small case volumes and incident rates. Principal Outcome Metrics. Complication rates; survival rates at three and five years. Results. The ASA score revealed that the average patient age and health were comparable across ML and the SVHG. Between ML and the SVGH, the postoperative complication rate was not significantly differed (58.8 versus 63.1). In both groups, patients who had a problem had an average of 2.5 complications. Patients receiving pancreaticoduodenectomy at either ML or the SVGH had a perioperative death rate. There was no appreciable difference in the 5-year survival rates (at ML versus at SVHG), despite the fact that the 3-year survival rate for patients with pancreatic adenocarcinoma was nearly twice as high at ML (31.2 versus 18.3 at SVHG). Conclusions. If low volume hospitals bring in the knowledge and treatment pathways required for better outcomes, they can produce results comparable to those of high-volume tertiary care facilities.

KEYWORDS:

Comparable, Community, Incident, Productid.

INTRODUCTION

The only potentially curative treatment for pancreatic cancer, which rates fifth in cancer-related death globally, is pancreaticoduodenectomy. However, only 10% to 20% of patients with pancreatic cancer are candidates for pancreaticoduodenectomy, a potentially life-saving treatment that is linked to substantial morbidity and a poor 5-year survival rate of 10% to 29% This is because pancreatic cancer typically manifests late. It has been suggested that complicated surgical procedures, such pancreaticoduodenectomy, be restricted to high-volume facilities due to evidence demonstrating improved outcomes. Although a high volume of pancreaticoduodenectomies specifically has been linked to better outcomes, some people think that a high volume of complex procedures carried out at a high-volume hospital, and not necessarily a specific procedure itself, is to blame. We also think that academic tertiary referral centers' ability to improve the quality of their surgical and perioperative health care delivery systems is due to the large number of complex procedures they undertake there.

Therefore, we postulated that smaller, low-volume hospitals' outcomes would resemble those of larger, high-volume hospitals if the optimal health care delivery systems of high-volume hospitals were translated to them. The surgical and survival results for patients who underwent pancreaticoduodenectomy at the low- and high-volume hospitals connected to the University of California, San Francisco were retrospectively examined to test this theory.

The Whipple technique, also known as a pancreaticoduodenectomy, is a significant surgical treatment most frequently used to remove malignant tumors from the pancreatic head. Chronic pancreatitis, duodenal injuries, and other conditions are also treated with it. The duodenum, proximal jejunum, gallbladder, and, occasionally, a portion of the stomach must all be surgically removed in order to remove the head of the pancreas because these organs share a blood supply in the proximal gastrointestinal tract. The distal segment (antrum) of the stomach, the first and second segments of the duodenum, the head of the pancreas, the common bile duct, and the gallbladder are all surgically removed together as part of the pancreaticoduodenectomy procedure. During the procedure, local lymph nodes are frequently removed (lymphadenectomy). The most typical type of pancreaticoduodenectomy does not, however, remove all lymph nodes because research has shown that patients do not benefit from the more involved procedure.

The surfaces of the peritoneum and the liver are examined for disease that has metastasized at the very beginning of the procedure, when the surgeons have acquired access to the abdomen. As conducting the procedure is contraindicated in the presence of active metastatic illness, this is a crucial first step. The superior pancreaticoduodenal artery and superior mesenteric artery are the sources of the pancreas' vascular supply, which also comes from the celiac artery via the inferior pancreaticoduodenal artery. The right gastric artery, which similarly originates from the celiac artery, produces additional, smaller branches. Due to their shared arterial blood supply (the superior pancreaticoduodenal artery and inferior pancreaticoduodenal artery), the duodenum and pancreatic head are removed together. These arteries pass through the head of the pancreas, necessitating the removal of both organs if the one blood supply is cut off. The duodenum's blood flow would be compromised if only the head of the pancreas were removed, leading to tissue necrosis.

The common bile duct is removed, but the liver's blood supply is not affected. This means that the surgeon must create a new link to drain bile produced in the liver while the liver still has a healthy blood supply. This is carried out following the procedure. The pancreatic duct will be reattached to the jejunum or stomach by the surgeon. A cholecystectomy is carried out during the procedure to remove the gallbladder. Due to the gallbladder being removed separately, this procedure is not completed completely at once. The portal vein, superior mesenteric vein, superior mesenteric artery, and inferior vena cava are the main arterial structures in the region that were left in place during the treatment and are relevant adjacent anatomy. These structures must be taken into account when doing this procedure, especially if a pancreatic head tumor is to be removed. The inferior vena cava, celiac artery, or superior mesenteric artery are considered unresectable if the tumor encases (wraps around 50% or more of the vessel) them. This is because the procedure would not help the patient while carrying a very high risk. Sometimes a section of the portal vein or superior mesenteric vein is permanently connected to the tumor.

In this situation, vascular surgeons resect the affected part of the vessel, and the vessel is then repaired using a vein graft, a side-to-side anastomosis, or both. Due in large part to the fact that patients who consent to this procedure frequently experience the development of brittle diabetes, a particularly severe form of diabetes mellitus, total pancreatectomy has not been shown to offer significant survival benefits. The pancreatojejunostomy may not always hold when the procedure is complete, and the patient may contract an infection. This may result in

a second procedure soon after to remove the remaining pancreas (and occasionally the spleen) in order to stop the spread of infection and potential morbidity. The pylorus-preserving pancreaticoduodenectomy, sometimes referred to as the Traverso-Longmire surgery or PPPD, has gained favor recently, particularly among European surgeons. The fundamental benefit of this procedure is that it should, in principle, preserve the pylorus and proper stomach emptying. Data on whether pylorus-preserving pancreaticoduodenectomy increases the likelihood of gastric emptying are contradictory. When the tumor does not involve the stomach and the lymph nodes along the gastric curvatures are not enlarged, a PPPD should be performed because it improves patients' ability to regain weight after a Whipple's (pancreaticoduodenectomy + hemigastrectomy) procedure.

The pylorus preserving pancreaticoduodenectomy technique is related with faster operation time and less intraoperative blood loss, necessitating less blood transfusion, compared to the usual Whipple procedure. The two approaches result in the same post-operative complications, hospital mortality, and survival rates. By any measure, a pancreaticoduodenectomy is a significant surgical treatment. Numerous studies have demonstrated that hospitals that conduct a particular operation more frequently achieve better overall outcomes (particularly when performing more complicated surgeries like pancreaticoduodenectomy). According to a widely used study published in The New England Journal of Medicine, hospitals with low volumes (averaging less than one pancreaticoduodenectomy per year) had surgical death rates that were four times higher (16.3 v. 3.8%) than hospitals with high volumes (16 or more per year). Morbidity has been observed to vary by a factor of approximately four depending on how many times the surgeon has already carried out the procedure, even in high-volume facilities. De Wilde et al. noted statistically significant mortality decreases in the Netherlands as the technique was centralized.

DISCUSSION

Information Source

Patients who received care at hospitals connected to the University of California, San Francisco (UCSF) between October 1989 and June 2003 were the subject of a retrospective chart study. The medical facilities include the Veterans Affairs Medical Center of San Francisco (VAMC), which averages 3 pancreaticoduodenectomies annually, and the academic tertiary care facility Moffit-Long Hospital (ML). Delayed stomach emptying, bile leaks, and pancreatic leaks are three of the most typical post-operative problems. About 17% of surgeries result in delayed stomach emptying, which is typically indicated by the need to install a nasogastric tube and the inability to tolerate a regular diet by the end of the first post-op week. A new biliary connection is created during surgery (often a choledochal-jejunal anastamosis linking the common bile duct and jejunum). In 1-2% of processes, this new connection may leak.

It is typical in this operation for the surgeon to leave a drain in place at the conclusion because this complication is pretty typical.[30] This makes it possible to find a bile leak thanks to higher bilirubin levels in the fluid being drained. 5-10% of procedures result in a pancreatic leak or pancreatic fistula, which is defined as fluid evacuated after postoperative day 3 that has an amylase level greater than or equal to 3 times the upper limit of normal. Fistulas, which relate to functional obstruction or aperistalsis of the intestine, are a physiologic reaction to abdominal surgery, particularly the Whipple procedure, and may now affect a considerably larger percentage of patients. While post-operative ileus usually resolves on its own, it can become extended when patients have vomiting, stomach pain,

discomfort, or a food aversion. To reduce protracted post-operative ileus, several steps are taken immediately after surgery [1]–[3].

A nasogastric tube is often kept in place to suction, drain, and remove contents from the stomach and intestines. To encourage the recovery of bowel function, a woman is advised to ovulate. Opioid drug usage, which affects intestinal motility, is restricted. Pancreaticoduodenectomies annually; the San Francisco County General Hospital (SFGH), which serves the local population; and Mount Zion which performs about one pancreaticoduodenectomy annually on average. Patients were identified using the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9) discharge codes for pancreatectomy and Current Procedural Terminology (CPT) codes for the Whipple-type procedure with pancreatojejunostomy (48150) and without pancreatojejunostomy (48152), the pylorus-sparing Whipple-type procedure with Through each institution's cancer registry, follow-up information was acquired. 184 patients had passed away, 9 had been lost to follow-up, and the remaining 176 had been under observation for an average of years (mean SD) at the time of the study. The UCSF Committee on Human Research and, when relevant, the individual Institutional Review Boards at each hospital gave their blessing to this study.

Outcome Variables

Age, sex, date of birth, race, and co-morbidities were among the patient demographics and pertinent patient history that were recorded. Inpatient factors included the procedure date, any difficulties, the length of stay in the hospital and intensive care unit (ICU), as well as the patient's final disposition. The reason for the procedure, the American Society of Anesthesiologists (ASA) risk score, the type of resection (pylorus-preserving versus classic; distal gastrectomy), the degree of pancreatic resection, whether the superior mesenteric vein was resected, intraoperative blood loss, the frequency and number of blood transfusions, and the length of the operation were also recorded. Tumor place of origin, tumor differentiation and dimensions, resection margins, and signs of perineural or vascular invasion made up the pathology data. For patients seen at the four hospitals, perioperative mortality (defined as death in hospital or within 30 days following discharge) and long-term survival were determined [4]–[6].

Statistical Evaluation

To compare the mean and median values of continuous data, the Kruskal-Wallis test was employed. For categorical data, Fisher's exact test was employed to assess statistical significance. Relevance was set to be. The three-year and five-year survival curves were calculated using the Kaplan-Meier method, and the log-rank test was performed to compare them. Data for SFGH, VAMC, and ZION were merged (Low Volume Hospital Group; LVHG) and compared to data for ML in order to account for the potential confounding effect of small case volumes and incident rates.

Results

Although the sex and race of the patient populations were considerably different between ML and the LVHG, the average patient age and health, as indicated by the ASA score, were comparable Pancreatic cancer was the most frequent reason for surgery at ML however there was a substantial difference between the groups. Without a discernible difference in the rates, pylorus-preserving surgeries were carried out more frequently than conventional distal gastrectomy procedures at both ML (64.7% against in 9% of patients in both groups, the superior mesenteric vein was removed. Although there were substantial differences in average blood loss between ML and LVHG, these differences were not found in the

transfusion rate or average number of blood units given to patients who needed transfusions. In comparison to the LVHG, the total operating time and length of stay in the ICU and hospital were much shorter at the ML Our findings show that the morbidity and mortality outcomes were comparable between the UCSF-affiliated low-volume and high-volume institutions. We think this is because low-volume hospitals have been able to create a healthcare delivery system that mimics the large-volume hospital and produces results that are comparable thanks to the sharing of operating procedures and perioperative care routes [7]–[9].

The low-volume hospital group, which included a community-based hospital, a county general hospital, and a Veterans Affairs Medical Center, which performed 3 pancreaticoduodenectomies annually on average, was able to reduce adverse events to a similar degree to the large-volume tertiary center, which performed 23 pancreaticoduodenectomies annually on average. The proportion of patients who experienced a complication was similar among hospitals. Actually, among patients who experienced a complication, the mean and median numbers of complications were identical. Additionally, compared to the globally reported average of 14.3%-26.7% [23], the rates of pancreatic fistulas and anastomotic leaks, which are frequently linked to longer hospital stays and higher mortality, were statistically equivalently lower (12.6% at ML and 5.9% in the LVHG). Although there were ethnic and gender variations between the LVHG and ML, the general health and age of the patients were comparable, suggesting that uniform patient selection among the hospitals contributed to the final equivalent outcomes.

According to clinical notes and data from the relevant cancer registries, the median followup at ML and the LVHG was 5.0 and 5.9 years, respectively. Although a retrospective chart review has inherent limitations, we feel that the extensive followup period enables us to precisely determine the long-term survival using our methodology. The perioperative mortality and five-year survival for all patients who underwent pancreaticoduodenectomy for any reason did not differ substantially between the SVGH and ML. Additionally, the perioperative mortality and five-year survival rates for patients who underwent pancreaticoduodenectomy for pancreatic adenocarcinoma at the LVHG or ML were similar and comparable to the nationally published rates of 3%-11% and 10%-29%, respectively However, the three-year survival rate for patients treated with pancreaticoduodenectomy for pancreatic adenocarcinoma differed significantly between the low- and high-volume hospitals in our study, as it did in others . It is obvious that more research is needed to determine the postoperative care routes and procedural capabilities that may be responsible for the early discrepancy in survival.

Both the average operating time and the average blood loss (albeit only by 96 cc) were considerably higher in the LVHG than at ML. The therapeutic significance of an additional 96 cc of blood loss is at best didactic and is further lowered by our discovery that the proportion of patients requiring a transfusion and the typical number of units transfused in such patients were identical across the groups. The difference in operating time can be an indication of the advantage a surgical team's large case volume provides in terms of operating room effectiveness. Operative efficiency did not appear to have an impact on efficacy, though, since the rate and number of units transfused, the perioperative mortality, the rate and average number of complications, and the 5-year survival rates did not differ substantially between the LVHG and ML

The much shorter hospital and ICU stays at ML are another indication of the improved efficiency of the healthcare system there. Although we cannot prove a cause-and-effect connection, we think the prolonged ICU stays most certainly had an impact on the longer hospital stays in the LVHG. The longer length of stay may have been caused by the LVHG's

failure to offer the required care and observation outside the ICU, but more research is required to determine whether there is a material difference between the technical abilities of the LVHG and ML. The LVHG, as well as other small and low-volume hospitals, might be able to attain ICU and hospital stays that are comparable to those of high-volume hospitals if significant discrepancies in staff or resource capacities could be found and remedied.

The hospitals associated with UCSF achieved the best long-term surgical outcomes. We think that these data show that, regardless of the number of pancreaticoduodenectomies performed, health care delivery systems like ours may provide results that are comparable. To start with, UCSF residents' cycle around all of the linked hospitals and may impart or share knowledge learned at the tertiary care center (ML) on how to preoperatively assess patients, assist with and conduct a pancreaticoduodenectomy, and identify potential postoperative problems. Second, all of the linked hospitals take part in the UCSF morbidity and mortality education program, which educates surgeons and staff members from ancillary fields like anesthesia, interventional radiology, and nursing. Finally, to assist in preoperative assessment and the technical aspects of the cases, skilled surgeons and case-related specialists frequently travel between institutions. We view low-volume hospitals as independent organizations that are able to bring in the necessary components of a successful healthcare delivery system to broaden the range of medical alternatives available to patients in the local area [10]–[12].

The majority of the population in the United States could benefit from better access to and results from complex surgical procedures if certain low-volume centers developed programs that were linked to, based on, and thus successfully emulated the practices and procedures present in high-volume hospitals. Regionalizing the execution of difficult surgical procedures may seem appealing on the surface, but this strategy has a number of limitations, including patient choice. However, it is imperative that low volume hospitals create thorough, in-depth programs in order to securely deliver high-quality, difficult surgical treatments. This cannot be emphasized enough. The outcomes of small and low-volume hospitals should resemble those of the high-volume centers by finding, exporting, and implementing the operative decision-making and perioperative care pathways that allow high-volume centers to achieve consistently good outcomes. Our early successes in reaching this exact objective in a small, county medical center in Northern California gives us hope.

CONCLUSION

Last but not least, experienced surgeons and case-related specialists frequently travel between hospitals to assist in preoperative assessment and the technical elements of the cases. We see low-volume hospitals as autonomous businesses that are capable of bringing in the essential elements of an efficient healthcare delivery system to increase the breadth of treatment options available to patients in the neighborhood. If some low-volume centers developed programs that were linked to, based on, and thus successfully emulated the practices and procedures present in high-volume hospitals, the majority of the population in the United States could benefit from better access to and outcomes from complex surgical procedures. On the surface, regionalizing the performance of challenging surgical operations may seem enticing, but this approach has a number of drawbacks, including patient choice. Low volume hospitals must, nonetheless, develop comprehensive, in-depth programs in order to safely administer complex surgical procedures.

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CHAPTER 7

MEDICAL STUDENTS' STRESS AND ITS LINKS TO SUBSTANCE USE AND ACADEMIC PERFORMANCE

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ABSTRACT:

Medical students that experience chronic stress struggle academically and develop depression, substance abuse, and suicidal thoughts. However, Ethiopia lacks sufficient research data in this area. Objective. We wanted to gauge how common and severe stress was among medical students, as well as how it related to substance abuse and academic performance. Methods. At Jimma University, a cross-sectional survey was completed by 329 medical students. The General Health Questionnaire (GHQ-12), the Medical Students Stress Questionnaire (MSSQ-20), and the Drug Abuse Surveillance Test (DAST) were used to gather the data. Version 20.0 of SPSS was used to analyze the data. Both the Student's -test and logistic regression analysis were used. Results. The respondents' average age was 23.02 years (SD: 2.074). Stress was present in 52.4% of people at this time. 281 (88.5%) students reported that their primary cause of stress was academic-related stressors. Smoking, drinking alcohol, and chewing khat were all substantially correlated with stress as were AOR values of 4.55, 1.05, and 19.77 for each. Throughout the first three years of the study, stress was very common. Academic success was strongly () but () negatively () linked with stress. Conclusion. Medical students struggled with a lot of stress, which had a bad effect on their academic performance. Stress was related to income, substance usage, and year of study. It is advised that you seek counseling and raise awareness.

KEYWORDS:

Academically, Chronic, Medical, Sectional.

INTRODUCTION

Stress is the body's response to changes that necessitate adaptation on a physical, psychological, or physiological level. Medical school is known to be stressful, and it has been seen that students experience extreme stress over the course of several years. Many pupils realize they cannot fully learn education during their first year due to the disruption of their environment. This casts doubt on many students' prior perceptions of themselves as accomplished and capable of "perfect mastery. These students are occupied with preclinical courses, which include a lot of material as they move through their second and third years. The process of moving from preclinical to clinical training teaches students how to interact with patients. Tension is consequently lessened. Another common perception among students is that they lack the information and abilities necessary to undertake medical training. Students gradually take on increasing responsibility for patient care during the fifth and the internship (sixth) years. Even if teachers expect students to be more competent, they nevertheless feel uninformed and uneasy. Their attempts to read "everything" and challenge everyone help them cope with these emotions by making them appear overconfident at times.

High parental expectations, the size of the courses, packed lecture halls, and unhappiness with class lectures were found to be the most frequent sources of stress, according to a 2007 study by Steamered and coauthors. Other stressful elements that the kids deal with include

social, environmental, physical, and family issues. These issues may have an impact on their academic performance and lead to substance abuse. Academic pressures, social challenges, and financial difficulties are the three main stressors that have been explored in research studies on medical students. According to a different research study, stress raises the dropout rate for medical students. Anxiety and sadness can also develop as a result of ongoing stress. According to further pertinent studies, 2.7% of Swedish medical students attempted suicide as a result of stress. Chronic exposure to stressful situations affects academic performance, memory loss, interpersonal connections with family and friends, and general life satisfaction. Chronic exposure can also hasten aging impair the immune system, suppress fertility, cause digestive issues and appetite loss, increase anxiety and depression, and ultimately result in suicide It can also cause serious health issues like hypertension, heart attacks, strokes, diabetes mellitus, and obesity. Stress has also been linked to poorer academic performance and sleep issues. Additionally, it has been connected to drug addiction and substance abuse.

Students studying medicine all across the world frequently experience stress. There is a danger of psychological stress, mental problems, and decreased life satisfaction among medical students from around the world. For instance, the majority of medical students from institutions in Karachi, Pakistan, and Mumbai, India had experienced stress at some point while they were studying. Higher prevalence (57%) of stress was found in a study conducted on medical students at King Saud University in Saudi Arabia. The high levels of stress experienced by medical students make them more likely to feel the temptation to cheat on exams, struggle to resolve interpersonal conflicts, pay less attention, lose focus, lose objectivity, make more mistakes, and engage in improper behavior like negligence. Additionally, stress among students impairs judgment and causes absenteeism, self-medication, and addiction to drugs such khat, cigarettes, and alcohol.

In this sense, using drugs includes consuming beer, smoking cigarettes and shisha, and chewing khat. An evergreen plant called kat (Catha edulis) is cultivated in Ethiopia, Yemen, Kenya, Sudan, Madagascar, and South Africa. In literature, the plant is referred to as "khat" frequently. The alkaloid chemical component cathinone found in fresh khat leaves is what gives khat its psychostimulant effects. A natural form of amphetamine is cathinone. The release of catecholamine from their storage sites is accelerated by cathinone, stimulating the central nervous system. Similar to amphetamine dependence, cathinone dependence follows a similar pattern. In Ethiopia, khat is frequently consumed for social leisure; drivers take it to stay awake while traveling long distances. Higher education students use khat to stay focused and work hard during study sessions in the belief that it enhances academic performance. The special segment of the population also uses khat in a particular way: farmers and craftsmen use it to lessen physical exhaustion, and traditional drug healers use it to treat illnesses. When mixed with coffee or tea with cigarette smoking, cathinone has a stronger central stimulating impact.

According to Andale and Zeleke, 33% of medical students had khat dependence, while non-chewers had a mean cumulative GPA that was noticeably higher than that of chewers Regular khat use is thought to increase the risk of constipation, cardiac arrhythmia, tooth rust, gastritis, and peptic ulcer disease. Khat's sympathomimetic effects can provide euphoria, hyperactivity, enhanced alertness, the capacity to focus, confidence, sociability, contentment, and an idea-flowing state Initial khat chewing sessions have a positive vibe that is upbeat, optimistic, and generally upbeat. After around two hours, tension, irritation, and emotional instability start to show up, which eventually results in sensations of stress and drowsiness Khat is a highly prized export product to the nearby nations and is widely accessible in Ethiopia.

However, no such study has been carried out in Ethiopia to determine the level of stress experienced by medical students. We set out to determine the frequency, intensity, and correlation between stress, substance use, and academic success among medical students at Jimma University. Drug abuse, sometimes referred to as substance abuse, is the use of a substance in quantities or ways that are harmful to the user or others. It is a type of disorder linked to substances. In the fields of public health, medicine, and criminal justice, various definitions of drug misuse are employed. When a person is using drugs, it can sometimes lead to illegal or antisocial behavior, and it can also lead to long-term personality changes in people. The use of some substances may result in criminal consequences in addition to potential bodily, social, and psychological harm, but these vary greatly depending on the local jurisdiction. Alcohol, amphetamines, barbiturates, benzodiazepines, cannabis, cocaine, hallucinogens (although no known psychedelic, one of the three categories of hallucinogens, has been found to have any addictive potential), methaqualone, and opioids are the drugs most frequently associated with this term. Although the exact root of substance abuse is unknown, there are two leading theories: either a hereditary predisposition or a habit picked up from others that, if it becomes an addiction, presents as a chronic, crippling illness.

In 2010, 230 million people, or around 5% of the population, took illegal drugs. Of them, 27 million use high-risk drugs, sometimes known as recurring drug use, endangering their health, resulting in psychological issues, or resulting in social issues, putting them at risk for such dangers. The number of deaths caused by substance use disorders increased from Practitioners have tried to view substance use from a broader perspective than the individual, emphasizing the role of society, culture, and availability. Of these, the highest numbers are from alcohol use disorders at 137,500, opioid use disorders at deaths, amphetamine use disorders at 12,200 deaths, and cocaine use disorders deaths. Some medical professionals prefer to use phrases like "substance and alcohol type problems" or "harmful/problematic use" of drugs instead of the more subjective terms like "abuse" of alcohol or drugs. The Health Officers Council of British Columbia adopted a public health model of psychoactive substance use that challenges the oversimplified black-and-white construction of the binary (or complementary) antonyms "use" vs. "abuse" in their 2005 policy discussion paper, A Public Health Approach to Drug Control in Canada. This paradigm specifically acknowledges a range of usage, from positive use to long-term reliance.

DISCUSSION

Design of the Study and Sampling Method

On the main campus of Jimma University, the research was done from April 1 to 30, 2013. One of the best universities in Ethiopia is Jimma University, which is situated in Jimma Town miles southwest of Addis Abeba). Through its valued and cutting-edge community-based educational system, Jimma University develops top-tier professionals at the undergraduate and graduate levels. The School of Medicine at Jimma University offers a six-year medical curriculum. Premedical courses are taken for one semester, preclinical courses are taken for two years, and clinical practice is taken for three and a half years by medical students. On a sample of 329 medical students, a cross-sectional self-administered questionnaire survey was done. Using a single population proportion formula, a 5% margin of error, and 61.4% of the prevalence of stress, the necessary sample size was calculated. Because there were fewer than 10,000 medical students enrolled in the school, the corrective formula was applied. After proportionally allocating the sample size to each year level, stratified random sampling was used to determine the academic year. After choosing one student at random from a list of their names, respondents were then chosen every four students using a systematic random sample procedure [1]–[3].

Sampling Method. There were undergraduate medical students enrolled in the first, second, third, fourth, fifth-, and sixth-year levels, respectively, during the data collection period. There were a total of 1334 pupils in these six categories, 1099 men and 235 women. From a total of 1,334 medical students, 329 respondents were chosen as a sample, and 75, 81, 50, 52, 38, and 33 students were chosen from the first to sixth years of study, correspondingly, using the proportionate allocation method. From each group, respondents were chosen using a straightforward random sample procedure.

Data Gathering

Students were asked to honestly answer questions about the study variables, such as their cumulative grade point average (CGPA), on the General Health Questionnaire with 12 items (GHQ-12), the Medical Students Stress Questionnaire with 20 items (MSSQ-20), the Drug Abuse Surveillance Test (DAST) with some modifications, and the sociodemographic questionnaire. Seventeen randomly chosen students who were not enrolled in the study pretested the questionnair. GHQ-12. It is one of the most often used tools for screening mental health issues including stress. Medical students were asked to rate whether they had experienced each of the 12 signs of stress listed on the questionnaire in the six months prior to the study period. Each question receives one of four typical replies from survey participants: "not at all," "no more than usual," "rather more than usual," and "much more than usual." Responses are scored using a binary scale (0-0-1-1) to determine the outcome. Total scores of 4 or higher were regarded as being favorable for stress.

MSSQ-20. It was used to determine the stressors that medical students were under and to gauge the level of stress these stressors were causing. By selecting one of five options, respondents were asked to rate the level of stress they had experienced on their own over the previous six months: causing no stress at all, causing light stress, generating moderate stress, causing high stress, and causing severe stress. For each of the corresponding responses, a value between 0 and 4 was assigned to determine the score. Six stressor domains are represented by the tool's 20 components. These include stressors that are related to academics (ARS), interpersonal relationships (IRS), social interactions (SRS), teaching and learning (TLRS), desire and drive (DDRS), and group activities (GARS).

According to the MSSQ, those stressors have a mean stress score of 0–1.00, which is considered low stress. It implies that there is no stress associated with it. Even if it occurs, the stress is minimal. Stress is considered to be moderate at 1.0–2.00. It suggests that stress is indeed caused by it. Respondents can effectively control it, though. The range 2.01-3.00 indicates excessive stress. It suggests that it puts a lot of stress on people. In this situation, stress seemed to have disrupted feeling and severely hampered daily functioning. Severe stress is defined as 3.01–4.00. It suggests that it seriously increases stress. It seriously interferes with regular tasks and profoundly disrupts emotions. High and severe levels of stress are abnormal, but mild and moderate levels are normal.

Definitions for Operations

The three most popular psychoactive substances under examination were khat chewing, cigarette smoking, and alcohol use. smokers of cigarettes, alcohol, and khat. This percentage represents the number of students who have ever smoked a cigarette, ingested alcohol, or eaten khat. Current users of alcohol, cigarettes, and khat. The percentage of young people that chewed khat, smoked cigarettes, or drank alcohol in the 30 days prior to research period is shown in 3. Stressor Domains and Stress Intensity Academic related stress (ARS), one of the six stressor domains, was the one that caused students the most stress, according to the MSSQ. 211 medical students (88.7%) tested positive for ARS. Among them, 63 (19.9%) had severe stress, 90 (28.4%) had moderate stress, and 128 (40.4%) had high stress. Teaching and

learning-related stressors (TLRS) and desire- and drive-related stressors (DDRS) were the second and third sources of stress, respectively, as indicated in Table 2. A total of 238 pupils (75.1%) had TLRS. From this group, 114 (36.0%) experienced moderate stress, 94 (29.7%) experienced high stress, and 30 (9.4%) experienced severe stress. On the same note, 221 (69.7%) had DDRS. Among them, 136 (42.9%) experienced moderate stress, 59 (18.6%) experienced high stress, and 26 (8.2%) experienced severe stress.

First-year students had the highest rate of stress (58.3%), followed by second-year students (57.0%), third-year students (48.9%), fourth-year students (56.6%), and fifth-year students (50.0%). The amount of stress and the year of study were significantly correlated. The odds ratios were 16.67 in the first year, 13.49 in the second, 9.12 in the third, 14.8 in the fourth, and 7.25 in the fifth, with the sixth-year group serving as the reference group (Table 6). In comparison to the final two years of coursework, the first three years of courses saw a higher prevalence of stress.

Discussion

The high rate of stress among medical students required attention since it may hinder learning, which may ultimately have an impact on the standard of patient care they give once they graduate. The overall prevalence of stress in the current study was 52.4%, which is nearly comparable to the prevalence reported by Spanish in Thailand and Abdulghani in Saudi Arabia The results of the current study, however, are better than those of the study published by Firth in Britain. Different curriculum, instructional environments, instructor qualifications and experience, and the quality of care provided to the students could all be contributing factors to the variety in stress levels. Additionally, the variations in the diagnostic tools utilized may also account for the variations in the amount of stress among various reports. In the study setting, there is a severe lack of qualified instructors in both the preclinical and clinical disciplines. Due to the enormous number of medical students and sparse faculty in the current system, academic counseling is not a frequent practice and may contribute to the high prevalence of stress.

In the current study, stress prevalence was declining as study year grew. The increasing acclimatization to the learning environment and the typically low failure rates in the later years of the courses could be the likely factors. The first-year students showed the highest prevalence of stress. This resulted from first-year students moving away from their families and into a new setting. This conclusion is consistent with the findings of research which showed that students found medical school hard in the first year but that the amount of stress decreased in later years. One explanation for this might be that older students have mastered study management techniques and are therefore more equipped to handle stress than younger ones.

The MSSQ found that among the six stressor domains, the academic stressor was the biggest source of stress, followed by the teaching-learning stressor and the stressor connected to drives and desires. The extensiveness of the courses and the frequent exams were the most frequent sources of stress among medical students, according to a 2007 study in Nepal by Sreeramareddy and coauthors. Students at medical schools experience significant stress due to the volume and complexity of the content they must acquire in their first year. Kholoud 2010 and Siraj et al., 2014 in Malaysia revealed additional data in favor of the claim that the heavy course load, lack of free time, scarcity of study materials, and frequent exams are to blame for medical students' high levels of stress. Students are under pressure as they must pass progressive exams in anatomy, physiology, and biochemistry in order to advance to the next level. The depth and breadth of the course materials as well as the teacher's demeanor

and credentials, particularly in the preclinical courses, were shown to be prevalent sources of stress for all students.

According to the current study, students with lower monthly incomes were more likely to report feeling anxious than those with greater monthly incomes. This suggests that, in addition to academic stresses, financial constraints may be a source of stress for students. Even though the university provides food and housing services for its students, they still require money for things like trips, printing handouts, dressings, and other basic necessities. This result is consistent with Gushes' 1997 research, which found that stress related to money issues was a problem for medical students. In the current study, there was a substantial negative correlation between students' academic achievement and stress, showing that academic performance declines as stress levels rise. Particularly during preclinical meetings, medical students are overwhelmed with a large amount of information. The amount of time they have to fully process all the material reviewed is restricted. They experience distress and disappointment since they are unable to cover all of the material, which prevents them from succeeding in the exam period. Students who experience significant stress during their medical education are more likely to struggle with problem-solving skills, lose focus, and ultimately experience depression. Additionally, stress among medical students can impair judgment, cause mental instability, and cause absenteeism from class. In reality, all of those factors undermine pupils' academic success [4].

This may be explained by the fact that chronic stress increases the production of the stress hormone cortisol, which impairs the hippocampus's and the amygdala's capacity to retrieve memories by completely blocking their glucocorticoid receptors. According to research reports by Kuhlmann and colleagues from persistent stress has an impact on a person's ability to encode memories and retrieve information. The body responds to stress by releasing stress hormones into the bloodstream. The stress hormone cortisol has a deleterious impact on memory when it is oversecreted. Cortisol specifically affects the hippocampus, prefrontal cortex, and amygdala. Because it possesses a large number of receptors that are sensitive to cortisol, the hippocampus normally controls the production of cortisol through a negative feedback system. However, the hippocampus's capacity to both encode and remember memories is compromised by excess cortisol in chronic stress situations [5]–[7].

The prevalence of alcohol use among medical students in the current study was 35.6%, which is comparable to the studies published by Kalayu and coauthors (36.4%) . Seimone et al., 2013, at the University of Botswana observed a somewhat higher prevalence of alcohol use (58%) among medical students. In the current study, 74.3% of the students who drank alcohol experienced stress symptoms. Stress is more likely to affect pupils who drink alcohol. Alcohol has a significant impact on the endocrine and brain systems. Cortisol, a hormone that causes stress, has a substantial correlation with alcohol consumption. Alcohol affects the central nervous system by acting as a sedative and a depressant. Serotonin and other neurotransmitters are affected by alcohol in the brain. Stress may worsen as a result.

Britton 2004 found a parallel conclusion that there is a favorable correlation between stress and alcohol use. Brady and Sonne 1999 noted that chronically stressed adults consume more alcohol and fewer nutrient-dense foods than those who are not under stress. By promoting the production of stress hormones, alcohol actually heightens the stress response. The hypothalamus-pituitary-adrenal axis is directly triggered by alcohol, causing it to overproduce cortisol. Alcohol use causes physiological stress, meaning that some of the body's reactions to it are comparable to those to other stressors. However, some also drink alcohol to decompress. Medical students smoked cigarettes on average 9.5% of the time. In the current study, 90% of cigarette smokers displayed signs of stress. According to Parrott 1999, smokers frequently falsely claim that cigarettes help them feel less stressed, but this is

untrue. Adult smokers do experience slightly more stress than non-smokers do, though. As they establish consistent smoking habits, stress levels rise, and quitting smoking lowers stress. In the current study, khat users made up 17.7% of the medical students. 87.5% of khat-chewing students displayed visible signs of stress. This finding implies that cathinone, the primary ingredient in khat, promotes stress by promoting the release of the stress hormone cortisol in the bodies of users. Alba's et al. offered supporting evidence showing that khat chewers had greater salivary cortisol levels than non-khat chewers [8]–[10].

CONCLUSION

In conclusion, stress affects many medical students. Stress risk factors were the year of study, monthly income, khat chewing, cigarette smoking, and alcohol consumption. Students experienced more stress over the first three years of the program than during the last two. The biggest sources of stress among medical students were things linked to their coursework. Academic performance was significantly impacted by high levels of stress. Interventions for stress reduction, academic counseling during the first three years of the courses, and awareness raising regarding the negative effects of substance use were suggested. The average percentage of cigarette smoking among medical students was 9.5%. 90% of smokers in the current study showed indicators of stress. Smokers typically assert mistakenly that cigarettes make them feel less anxious, although this is untrue, according to Parrott 1999. However, adult smokers do feel a little bit more stress than non-smokers do. Stress levels increase as they develop continuous smoking behaviors, and stopping smoking reduces stress.

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CHAPTER 8

INVESTIGATING THE IMPACT OF HOPE ON ACADEMIC PROBATION STUDENTS' GPA AND RETENTION IN COLLEGE

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ABSTRACT:

In this study, 235 students at a private Northeastern university who were on academic probation were examined to determine the effects of optimism on their academic performance and retention. A required online course for probationary students was created to support academic and non-academic abilities, to raise GPAs, and to increase retention. The Hope Scale (Snyder et al was used to gauge whether students with higher levels of hope would be more successful academically after the course. According to their test results, students were divided into three groups based on their level of hope: high, medium, and low. According to the findings, students who finished the course had a higher chance of being retained than those who dropped it, had a somewhat higher GPA by the end of the semester, and high-hope students had the most gains in GPAs overall. When a new member of the academic staff at a university or college is hired, they must spend a period of academic probation. It is stated in the employee's terms of employment and may change from person to person and from organization to organization. It typically lasts three years for academic employees and six months to a year for other workers in universities that were established before the Further and Higher Education Act of 1992. The period is often merely a year for all academic and non-academic personnel at the universities established by that Act and in schools of higher education.

KEYWORDS:

Academic, Examined, Gauge, Organization.

INTRODUCTION

In the fall of 2009, 18.4 million students were enrolled in two- and four-year postsecondary institutions, according to the National Center for Educational Statistics. These students began their undergraduate studies following a thorough search and selection procedure to choose the institution they felt was the best "fit." However, 26% of first-year college or university students will drop out without earning a degree. Despite this fact, students and institutions often hold themselves to high standards for academic performance given the time and resources invested in the college search process by the student and the recruitment and admissions process on the side of the institution. To make sure the student fits the academic profile of a likely graduate, great effort is taken to analyze the student's high school records, extracurricular activities, and test scores. It's expected that students will show up for class, be able to maintain the necessary academic rigor, and graduate on schedule. However, 25% of all students will experience academic probation at some point during their time in college.

Even given their limitations...college grades may well be the single best predictors of student persistence, degree completion, and graduate school enrollment," write Pascarella and Teenzine on page 396. A student's first-year GPA was discovered to be inversely related to their risk of dropping out of college by Ishita and Desjardins. As a result, while creating academic support initiatives to promote persistence and retention among college student

populations, grades, academic performance, and probationary status are crucial considerations. The degree to which a student, instructor, or institution has reached their short- or long-term educational goals is known as academic achievement or academic performance. Academic achievement is the completion of educational milestones such secondary school diplomas and bachelor's degrees. Academic achievement is frequently assessed through exams or ongoing evaluations, but there is no consensus on the optimum method of assessment or whether components declarative information like facts or procedural knowledge like skills—are most crucial. Aspects like test anxiety, surroundings, motivation, and emotions need to be taken into account when building models of academic achievement because there are conflicting data regarding which individual components correctly predict academic performance. Schools are now paid primarily on the academic success of their students. A school with more academic success would be given more funding than a school with lesser success.

The Academic Performance Index is used in California to assess schools' academic performance. Differential intellect and personality traits have been related to individual disparities in academic success. Students who score higher on IQ tests and conscientiousness tests which are linked to effort and achievement motivation tend to perform well in academic contexts. In addition to intelligence and conscientiousness, a recent meta-analysis revealed that mental curiosity as evaluated by usual intellectual engagement has a significant impact on academic accomplishment. When students begin first grade, their semi-organized home learning setting changes into a more structured learning one. Early academic success increases subsequent academic success.

Comparative performance graph for GCSE results

The term "parent's academic socialization" refers to how parents shape their children's abilities, attitudes, and behaviors in order to impact their academic performance. Parents have an impact on students by the environment they create and the conversations they have with them. The socioeconomic level of parents may have an impact on children's academic socialization. The learning surroundings of parents with higher education tend to be more exciting. Furthermore, according to recent studies, the strength of a child's relationship with their parents will affect how academic self-efficacy develops in adolescent-aged children, which will in turn affect how well they perform academically The early years of a child's life are critical for the development of their language and social abilities. Students are better able to adjust to academic expectations when schools are prepared in these areas.

Physical activity has been found in studies to boost brain activity, particularly in the executive processes of the brain, such as attention span and working memory, and to enhance academic performance in both primary school students and college freshman. On-cognitive elements or talents, which include things like academic self-efficacy, self-control, motivation, expectation and goal setting theories, emotional intelligence, and determination, are a collection of "attitudes, behaviors, and strategies" that support academic and professional success. Sociologists Bowles & Gintis first used the term in the 1970s to draw attention to elements other than those evaluated by cognitive test results. The phrase is used to distinguish between cognitive aspects that teachers assess through tests and quizzes. Because they offer a more comprehensive explanation for academic and professional outcomes, non-cognitive skills are becoming more and more popular. High academic performance has a good link with organized extracurricular or cultural activities as well as improvements in postsecondary education, attendance rates, school involvement, GPA, and depression rates. Additionally, it has been discovered that adolescents who participate in supervised extracurricular activities have good developmental results. Strong academic achievement has been related to high

school athletics, especially among urban children. However, participation in athletics has been connected to higher rates of truancy and alcohol misuse among high school students.

The mechanism underlying this relationship is not always evident, despite the fact that evidence points to a positive correlation between extracurricular activity engagement and academic success. Additionally, there are other independent factors that affect the connection between academic success and extracurricular activity engagement. Civic involvement, identity development, healthy social interactions and behaviors, and mental health are some of these factors. According to earlier studies on young people, participating in supervised after-school activities can help young people build positive social networks that are helpful for academic success. There are a variety of additional factors to take into account while evaluating academic success. Individual characteristics, familial and demographic effects, program resources, and content are just a few of these variables. For instance, it has been discovered that socio-economic position affects how many students engage in extracurricular activities. Additionally, it has been claimed that the peer connections and encouragement that build in extracurricular activities frequently have an impact on how people do in class. It is crucial to get a better knowledge of how academic accomplishment can be viewed in both a positive and negative perspective given all the factors to take into account. In the majority of evidence points to a good correlation between extracurricular participation and academic success. More study could be done, it has been suggested, to better understand the direction of this association. Together, the data can help us comprehend the precise factors to take into account when evaluating the potential effects of extracurricular activity engagement on academic performance.

DISCUSSION

Probationary Students' Characteristics

According to research, students who are on academic probation generally have grade point averages below a C, have weak academic preparation insufficient time management skills bad study habits and trouble adjusting to college life Additionally, probationary students display lower levels of motivation and external locus of which affects their perceptions of their level of control over their academic circumstances. According to "When students are faced with academic demands, the way they approach academic tasks and view themselves can play a significant role in their academic success"

Students who are on academic probation run the risk of getting stuck in a cycle where their workload keeps growing while they lack the study and time management skills necessary to balance the demands of their courses. Additionally, probationary students externalize their unfavorable evaluation when they receive a poor test score or failing grade rather than using it to guide their future behaviors and decision-making processes. These students are also less likely to ask for help when they need it, according to research. Many probationary students struggle with setting and maintaining academic goals as well as long-term professional goals [1]–[3] in addition to planning issues. Academic progress is significantly impacted by inability to set up and manage proximal and distal goals. The American College Testing (ACT) organization published a report in which it stated that "students who master course content but fail to develop adequate academic self-confidence, academic goals, institutional commitment, and social support and involvement may still be at risk of dropping out".

The goal of supporting probationary students has led to the creation and implementation of numerous interventions. There are several types of interventions, from those that are more voluntarily to those that are required, "in an attempt to "push" students to help themselves Developing agreements with students, requiring supervised study time, demanding individual and group therapy, and scheduling sessions with academic advisors are just a few These

intrusive initiatives/programs are frequently implemented to help students on academic probation who might not otherwise ask for help. Interventions that are voluntary or non-intrusive encourage students to participate in specifically created courses, workshops, and seminars by holding advisory meetings. These interventions, whether voluntary or not, are made to quickly get students back on track academically. Even though these interventions have the best of intentions, students must value the knowledge and skills they receive, hope that they will enhance their academic situation, and believe that they will help them achieve their academic objectives. Interventions often offer practical advice on how to improve behavioral efficiency in studying, time management, and participation in class; nevertheless, students must regard them as viable options that will support them in their academic struggles. Positive psychology theories contend that in order to use techniques, get through difficulties, and accomplish important goals, people need to think that success is possible. This study uses the paradigm of hope theory a member of the positive psychology family, to look at how college students who are taking part in an academic intervention perceive their accomplishment [4], [5].

Hope

A motivating belief system that influences goal-setting actions and expectations for future success is called hope. High levels of hope have been linked to higher academic and athletic performance, the maintenance of healthy lifestyles, the ability to solve problems, and psychological well-being in both adolescents and adults. Because people with high levels of hope are better equipped to create practical goals and make wise judgments regarding them, hope positively influences so many facets of life. Snyder et al. found that people with high hope may develop objectives that are clearly defined, create pathways to achieving those goals, and maintain the volitional cognition required to employ various pathways (agency) as motivation to achieve goals wanes. Hope needs goals because they act as the anchor system that directs routes and agency views. Individuals with higher levels of hope than those with lower levels of hope are more likely to think of alternate routes when difficulties arise and are better able to control their negative emotions. In order to achieve goals, agency and routes are both equally important, and when one component of that system deteriorates, it affects the other. Snyder et al. concur that even the best plans might fall short if there is no conviction that they will work. Positive self-statements like "I meet the goals that I set for myself" have been shown to increase agency ideas in people see Dispositional Hope Scale; and routes perceptions are at their best when there are a variety of possibilities. People with high levels of hope are able to keep their objectives in mind and monitor their progress toward them [6]–[8].

It has been demonstrated that people with high hopes perform exceptionally well in educational settings. It has been discovered that scores on the hope measurement are predictive of academic achievement across all grade levels. Scores on the Hope scale are predictive of success at various student levels. Even after controlling for locus of control and self-worth, scores on the hope assessment strongly predicted higher scores on the Iowa Test of Basic Skills and achievement test results for primary kids. Grade point averages (GPAs) for junior high and high school students have been predicted by hope scores, and higher semester and total GPAs for college students have been reported. According to additional research, DHS test results are a good predictor of student coping and study skills goal maintenance in challenging academic circumstances, and obtaining a college degree. According to this data, it would seem that students on academic probation would benefit from university involvement most significantly if their goal was academic improvement.

Objective

We looked into the elements that might affect students who are on academic probation using the hope theory as a guide. Students engaged in a course specifically created to foster academic performance were the participants in this study. We looked explored whether this course may be an effective intervention to raise the GPA of college freshmen placed on probation as well as whether hope had an impact on this particular population's.

A private institution in the Northeast created an intrusive program that aimed to incorporate elements from both required and voluntary interventions in order to support students who were on academic probation. This was accomplished by developing an online course that students had to satisfactorily complete in order to get out of the first semester (15 weeks) on academic probation. The contents included in the online course were collected from workshops that have been a part of widely used volunteer intervention programs. The UNIV 01: Academic Success course was recommended and authorized by the university senate. UNIV 01 was created to help probationary students build and improve the abilities they will need to succeed in school and in the future. All students who are put on probation must enroll in a course on academic success techniques for one semester hour of nonliberal arts credit, according to the university bulletin. The course would help students improve "nonacademic" skills like time management, study skills, test-taking techniques, and a greater grasp of university resources. The course also covered a variety of modern concerns that frequently have an impact on students' achievement, as well as information on financial aid, relationships, and mental health difficulties. The course was offered online, was asynchronous, self-paced, and could only be passed or failed. Before enrolling in the following semester, the student had to satisfactorily complete and pass the course [9]–[11].

UNIV 01's structure was created so that there were 10 distinct modules that were presented in order. Before going on to the next, students had to satisfactorily finish each module. Throughout the training, a variety of instructional techniques were used. The instructor created PowerPoints, exercises, and assignments pertaining to the subject matter being taught in each module before the course was put into action. All of the relevant course materials were put into Blackboard, the university's learning management system (LMS), along with the instructor's lecture, which was digitally recorded. Each module had a video lecture, a power point presentation, exercises, a variety of tasks including readings, quick papers, and surveys, and a posttest to gauge understanding of the material. The best ways to integrate work obligations, social obligations, personal obligations, and course requirements with the habits required for academic success were taught to the students. The Dispositional Hope Scale (DHS) was one particular assignment since the emphasis was on developing abilities to enable a sense of confidence in their academic performance or agency. This tool was chosen because it has traits common to many other motivation, adaptive functioning, problem-focused coping, and physical well-being measures and because it supports Tinto's theory that the achievement of educational and occupational goals is crucial for student success.

For this course, a survey with 44 self-report questions was created (with help from the Department of Institutional Research). Students were asked how often they missed class, participated in extracurricular activities (clubs and programs), used academic resources (writing centers, tutoring, and libraries), practiced self-regulation (knowledge of study skills and time management), talked with support systems (friends, family, and university faculty), spent actual study time, worked off campus, and used the internet for academic and extracurricular purposes. The numerous self-report items that differ in report style and topic have led to the institutional survey's low dependability (). Despite the institutional survey's poor reliability, connections between the self-report data and other research measures were found.

For students who have been placed on academic probation, the UNIV 01 course was designed to offer academic and nonacademic support as well as to underline the availability of campus resources. The course was created with the knowledge that dropout rates are higher for students who are on academic probation. Additionally, it is common practice to identify "at risk" kids throughout the admissions process based on criteria such as "ethnic minorities, academically disadvantaged, have disabilities, are of low socioeconomic status. At-risk students are frequently those who are "academically underprepared" or the "first in the family to go to college" Due to these drawbacks, many institutions offer at-risk students extra support services in the form of supplemental instruction, tutoring, and academic support integrated into various programs. The students in this course (UNIV 01) may not have a clear understanding of how to succeed in college because they do not necessarily fit the usual definition of a "at risk" student and did not initially get additional academic support. These pupils were identified as having academic difficulties with a cumulative GPA of 2.0 or lower after at least one semester. With this GPA, they are now in a higher risk group for leaving school and not being retained.

When first-year students with GPAs below 2.0 completed their first year, UNIV 01 was made available as a pilot course in the fall of 2007. Any first-year, second-year, or third-year student who was on academic probation and had never taken the course before was automatically registered for it for the spring 2008 semester. Ten modules, five tasks, and a pre- and post-course survey were to be finished by each enrolled student. The Dispositional Hope scale was added as one of the assignments by the researchers in the fall of 2008. Students were required to submit an online informed consent form, and if they choose not to participate, they had to complete an optional assignment.

CONCLUSION

A few restrictions apply to the present investigation. One potential drawback is that our sample of students only completed the hope questionnaire once, so we are unable to infer a rise in hope during the duration of the course. To ascertain whether increases in hope are correlated with gains in GPA, future research will need to incorporate a pre- and post-measure of hope within the context of academic intervention. Additionally, the university's 44-item self-report measure, which asks broad questions on absences from class, involvement in extracurricular activities, use of academic resources, self-regulation strategies, support networks, and time spent working and studying, showed very poor reliability indicating a low internal consistency. Relationships between time management, class attendance, and hope scores should be evaluated cautiously because the measure's reliability is questioned. To rule out competing hypotheses that are known to predict academic accomplishment, such as self-efficacy, engagement, coping, and goal orientation, future studies should include additional well-established measures of student perspectives Furthermore, a large portion of these students in our sample come from middle- to upper-class families, making them potentially more optimistic than pupils who face various social restrictions or have access to fewer resources in the classroom. Future study must include a variety of samples of academically underachieving students, even if hope is thought to be a construct that is universally useful and a theory that assists students from all backgrounds. The impact of hope and the kids in this particular cohort's sustained academic achievement will be the subject of a longitudinal study, among other future research projects. Monitoring the level of hope in probationary students over time will show whether hope treatments are effective long-term tactics for promoting academic performance and retention.

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CHAPTER 9

USING COMPUTER TECHNOLOGY AND THE VIEWPOINT OF TEACHING FOR ACADEMIC EMOTIONS OF ART STUDENTS

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ABSTRACT:

This study aims to investigate the contributing aspects to art students' shifting academic mood. A survey using a questionnaire is carried out with the aid of computer information technology to investigate the impact of various coping strategies on the academic moods of art students when the impact of demographic factors is taken into account. The condition of being the only child of art students is found to have an 80.93 score on the arousal emotional scale, which is significantly higher than the 78.61 score for the condition of not being an only child of an artist. Students who study art are more likely to adopt a healthy coping mechanism. When the grade ranges from 1 to 3, the scores of negative and highly arousing academic emotions are discovered to be 79.3, 80, and 96.83, respectively. The scores of unfavorable and highly arousing academic emotions tend to rise as grades rise, according to the overall pattern. When the overall qualities of art students' academic emotions are taken into account, art students experience more negative academic emotions than happy academic emotions. Females have more negative intellectual emotions because they are more delicate and sensitive. Additionally, whereas a negative coping style can positively estimate the poor academic mood, a positive coping style can positively anticipate the positive academic mood in students of art. The results, it is argued, might serve as a guide for forecasting shifts in art students' academic mood.

KEYWORDS:

Contributing, Investigate, Mechanism, Emotions.

INTRODUCTION

Students who study art should be seen as a special group who should not only take professional courses but also develop their artistic literacy. Art students will therefore have a lot of academic obligations as a result of managing both. discovered that when the academic load is compared between Chinese children in primary and high schools, it rises along with academic level. A solid comparison of the academic demands placed on students in basic and higher education shows that university students face greater challenges than do students in elementary and secondary schools. Additionally, their learning efforts will be hampered by this hectic state's addition of unfavorable feelings like frustration, anxiety, and depression. This will eventually lead to academic burnout as well as unstable academic performance and a lack of enthusiasm for learning new things. Social thinking should be used to determine how to help art students accurately understand and evaluate themselves, boost self-confidence, improve focus while studying, and maintain a positive academic attitude.

The publication Educational Psychologist in chose 8articles relating to the study of academic emotion as evidence that the field has advanced to a new level. These articles investigate academic emotions from several angles, including academic success and learning motivation Currently, there are two components to the research findings on academic emotion Academic emotion and learning motivation: Academic emotions have an impact on students'

willingness, effort, and motivation. On the other hand, negative academic emotions like resentment and disappointment may have an impact on students' drive to learn. There might be some exceptions, such as when someone is ashamed. On the other hand, these kinds of negative emotions may actually help children study more and make significant strides in their academic endeavors. Academic success is predicted by a student's interest, motivation, learning strategies, and internal versus external regulation of regulation under the umbrella of self-regulated learning, which is very strongly tied to emotions. Thus, taking emotions into account is essential. It is not a good idea to classify positive ones as promotional and negative ones as deterrents because sometimes the opposite effect might happen Academic emotion and attribution: People feel proud when they credit internal sources for success but feel ashamed when they don't. Humans might perceive emotion differently depending on the attribution method used. Since both happy and negative emotions may lead to widely accepted prevalent and dominating patterns, but not exclusive ones, it is difficult to relate attributions to the corresponding specific emotions. Positive and negative emotions can be distinguished from one another more clearly.

Researchers in China are currently increasingly interested in the current state of academic emotions, although most of them are just looking for differences in demographic characteristics, and their findings differ. Additionally, the key findings of the research on the current state of academic emotions for typical college students are as follows: There are disparities in academic emotions of college students based on both gender and source of students. Academic mood also shows notable variances by gender and grade, but no discernible differences are seen by origin. Additionally, there are significant grade disparities based on a student's academic mood. For instance, freshmen had the highest academic mood scores. Therefore, while dealing with the pleasant category, college students have a higher intellectual emotional experience; for instance, female liberal arts majors are more pleasant than male liberal arts majors. Gender is found to be a significant role even if the results of gender on emotions have varied implications. Therefore, gender and major are two important characteristics that might significantly affect academic feelings.

Research on coping mechanisms and academic emotions together is currently scarce. The occurrence of anxiety and sadness may be predicted by both constructive and destructive coping mechanisms. Positive coping strategies can lessen the incidence and severity of anxiety and depression, whereas negative coping strategies can cause the development and escalation of these conditions. The study of academic emotions is not fully covered in the research on coping mechanisms and stressor emotions; instead, it mainly pays attention to the study of unfavorable emotions. Following are a few ways higher education students might cope with stress and negative emotions: In order to investigate the impact of various coping mechanisms on academic mood and to serve as a guide for the forecasting of academic mood changes in art students, computer information technology (CIT) is used in this paper.

Computer hardware, software, educational theory, and practice are all used in conjunction with educational technology, also known as ditech or edtech, to assist learning. When referred to by its acronym, "EdTech," it frequently alludes to the business of firms that produce instructional technology. Tanner Merles and Shahid Alvi argue that "EdTech is no exception to industry ownership and market rules" and define the EdTech industries as all the privately owned businesses currently engaged in the financing, production, and distribution of commercial hardware, software, cultural goods, services, platforms, and other goods for the educational market with the intention of making a profit. Many of these businesses are established in the US and are fast entering the North American educational industry as well as expanding globally.

Educational technology is based on theoretical knowledge from a variety of fields, including communication, education, psychology, sociology, artificial intelligence, and computer science, in addition to the practical educational experience. It includes a number of fields, such as learning theory, computer-based training, online learning, and m-learning, which makes use of mobile technologies. Education technology is described as "the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources" by the Association for Educational Communications and Technology (AECT). Instructional technology is defined as "the theory and practice of design, development, utilization, management, and evaluation of processes and resources for learning" in the document. As a result, the term "educational technology" is used to describe all reliable and valid applied education sciences, including equipment, processes, and procedures that are based on scientific research. It can also refer to theoretical, algorithmic, or heuristic processes depending on the context. The practice of incorporating technology into education in a way that fosters a more diversified learning environment and gives students a chance to learn how to utilize it while also completing their regular assignments is known as educational technology.

DISCUSSION

Information and Computer Technology

In February 1946, the first electronic computer was released into the world. Computers and the Internet gradually transitioned from experimental to operational stages during the following fifty years. The management of early military scientific research has been replaced by a wide range of global applications for computer technology. Additionally, the Internet unifies the entire online universe into a single enormous supercomputer. The widespread sharing of processing, communication, software, storage, and information resources becomes then apparent to computers. The use of computers and information technology (CIT) has permeated many aspects of life. No matter where a person is, connecting to any part of the world is now simpler than it used to be if they had a computer or a mobile phone. Every single location on Earth has entered the information society in the twenty-first century. Therefore, mastering the CIT is the primary prerequisite for success [1]–[3].

With the development of computing technology, education has altered as a component of society. Information technology with a computer as the primary component was widely used in both education and the teaching process at the turn of the 20th century. The goal, structure, subject matter, and organizational style of education have all experienced dramatic modifications. The core of this change is the requirement for CIT integration with educational content. Education informatization is the process of combining computer technology with educational content. The CIT is used extensively and intensively in this process to support educational progress and improvement. Teachers serve as the primary structural support in traditional instructional methods. the information that teachers teach their students. However, according to the new teaching paradigm, teachers can work as facilitators and mentors for students' learning activities, and students can develop their own knowledge in accordance with their own mental models. Therefore, when an information technology environment is taken into account, this is a brand-new teaching idea appropriate for leading, teaching, and learning. The strong computer network-based features made possible by the CIT's widespread adoption and use have revolutionized how schools deliver instruction and how teachers are managed The following is a summary of the CIT's specific benefits.

Attitude in Class

According to the theory of academic emotions, educational psychology research has always placed a high value on emotions. Although researchers have been looking into the topic since

the 1930s, it wasn't until 2002 that the idea of academic emotion was first put forth clearly. As a result, emotions that are closely related to academic learning, classroom instruction, and academic accomplishment were characterized as academic emotions. Academic emotion, as it has been further developed, is now thought to refer to a variety of emotional states connected to a student's academic endeavor when teaching or learning, including happiness, boredom, disappointment, worry, and wrath. It encompasses not only the range of feelings that students go through after learning of their academic success or failure, but also the feelings they go through while learning in class, doing daily assignments, and taking tests.

When dividing academic emotion into categories like positive emotion and negative emotion or the classification of positive emotion, neutral emotion, and negative emotion, scholars typically use pleasure. But the prior system of categorizing academic emotions, which only considered pleasantness, missed the aspect of arousal. As a result, arousal was added to the list of academic emotions by later scholars. Additionally, there are four sorts of academic emotions: positive high, positive low, negative high, and negative low arousal. The emotion that arises when a negative process comes to an end falls under the second category, while emotions brought on by happy events fall under the first. Negative emotions that are not amenable to subjective control make up the third category. The fourth category of emotion is distinguished by a great degree of control The four dimensions of academic emotion are depicted in further detail. The literature suggests that the dimension numbers varying between 6 and 10 represent intellectual feelings. It is feasible to depict them with fewer dimensions, though. However, there is still debate on the dimensions of organizing emotions. Emotions can be represented in a two-dimensional space when self-reported data is taken into account. The vertical line indicates high vs. low, while the horizontal line indicates positive vs. negative [4]–[6].

There are currently few resources available in China for measuring academic emotions. Three different scale kinds are regularly used. The Test Anxiety Scale was used to build the Academic Mood Questionnaire, which is the first. It consists of three subscales, which include questions on studying, taking classes, and taking exams. Pride, joy, hope, ease, worry, rage, disappointment, shame, and boredom are all included in each subscale. The Adolescent Academic Mood Questionnaire, which has a total of 72 items, is the second. There are 13 different academic emotions included in it, which are broken down into four categories: positive high, positive low, negative high, and negative low arousal. The General Academic Sentiment Questionnaire for College Students is the third. It includes the academic pursuits of college students across a range of disciplines, and the 88 projects assembled are all generic. The 10 subtests measure ten emotions, which are further classified into positive high arousals like interest, sneakiness, and hope as well as negative high arousals like embarrassment, fear, and wrath. Positive low arousals include pride and relaxation, while negative low arousals include negative high arousals like disappointment and fury In addition to demographic characteristics, there are two groups of factors that influence academic mood: personal internal factors and external environmental factors. These two factors' particular performance is displayed [7]–[9].

Reliability of the Questionnaire

Validity is not required by reliability. That is, a valid measurement that is accurate consistently does not always reflect what is being measured. While there are numerous trustworthy assessments for particular skills, not all of them would be appropriate for predicting, say, job success. Although reliability does not indicate validity, it does set a limit on a test's total validity. A test that is not 100% accurate cannot be 100% valid, either as a way to gauge a person's personality traits or as a way to forecast test results. A test that is

unreliable cannot possibly be genuine, even though it may nevertheless produce relevant information.

For instance, a set of weighing scales would be extremely accurate, yet they would not be valid because the returned weight is not the genuine weight if they constantly overestimated an object's weight by 500 grams. The scale must provide the object's actual weight in order for it to be considered legitimate. This example shows that a totally reliable measure is not always valid, but that a reliable measure is always required to be valid. The production of substitute test forms that are identical in terms of content, answer procedures, and statistical characteristics is the key to this methodology. For several general intelligence tests, there are alternative formats that are usually regarded as being equal. It is conceivable to create two test versions using the parallel test paradigm that are equal in that a person's true score on form A would be the same as their true score on form B. Differences in test results on form A and form B may only be the result of measurement errors if both forms of the test were given to a large number of participants. When determining the test's reliability, the correlation between these two separated halves is taken into account. The Spearman-Brown prediction method is then used to step up this reliability estimate by a factor of two to the whole test length.

There are various strategies for dividing a test to calculate dependability. A 40-item vocabulary test, for instance, could be divided into two subtests: one with items 1 through 20, the other with things 21 through 40. However, because to a rise in item difficulty and weariness, the responses from the first half may be consistently different from responses in the second half. When dividing a test, it would be necessary for the two halves to be as similar as feasible in terms of both its content and the likely state of the respondent. The simplest approach is to divide the test into two halves, with the odd-numbered things making up one half and the even-numbered ones the other. This configuration ensures that each half will have an equal number of items from the test's beginning, middle, and end [10]–[12].

Internal consistency: evaluates how consistently results are obtained across test items. Cronbach's alpha, which is typically read as the mean of all potential split-half coefficients, is the most popular internal consistency metric. The Kuder-Richardson Formula 20 is an early method of assessing internal consistency that has been generalized into Cronbach's alpha. Despite being the most frequently employed, there are various myths around Cronbach's alpha. These dependability measures don't have to be equal because of how sensitive they are to various types of mistakes. Additionally, dependability is a characteristic of a measure's results rather than the measure itself, which is why it is said to be sample dependent. If the second sample is taken from a different population because the true variability is different in this second population, the reliability estimates from the first sample may differ from those of the second sample beyond what may be expected due to sampling fluctuations. This is true for all measurements; yardsticks may measure homes accurately, but they are unreliable when measuring the lengths of insects.

Clarity of expression for written assessments, prolonging the measure, [9] and other informal methods can all help to increase reliability. However, item analysis, a type of formal psychometric analysis, is thought to be the most efficient technique to boost dependability. The computation of item difficulties and item discrimination indices are both a part of this analysis, with the latter index requiring the computation of correlations between the items and the total item score for the entire test. The dependability of the measure will rise if inferior items are substituted for those that are near-zero, extremely low, or have negative discrimination.

CONCLUSION

Applying various coping mechanisms when under pressure directly affects vocational students' academic mood. If they would select a constructive coping method, their psyche would advance and be healthy. The research on topics like stress, academic emotions, and coping mechanisms of art students is very valuable given the rising number of art students. This study uses a survey based on a questionnaire to investigate the effects of various coping mechanisms on academic mood when demographic factors are taken into account. The experiment's findings demonstrate that students who are the only child majoring in art have positive and high arousal emotional ratings of 80.93, which is considerably higher than the 78.61 of students who are not the only child majoring in art. As a result, art students are more likely to adopt a healthy coping mechanism. When the grade ranges from 1 to 3, the scores of negative and highly arousing academic emotions are discovered to be 79.3, 80, and 96.83, respectively.

Similar to the shifting tendency of negative and low arousal academic emotions, the scores of negative and high arousal academic emotions rise with grade. When the basic qualities of art students' academic emotions are a concern, art students feel more negative academic emotions than happy academic emotions. Women are found to be more delicate, sensitive, and to have more unfavorable academic feelings. Additionally, while positive coping strategies might predict academic mood favorably for art students, poor coping patterns can predict academic mood negatively. Additionally, coping mechanisms moderate the effects of favorable and low-arousal academic emotions. As a result, effective coping mechanisms mitigate the detrimental impacts of negative and highly aroused academic emotions. As a result, one of the effective strategies for preventing and resolving students' negative academic feelings is to help them develop positive coping mechanisms. These problems are among the research's limitations The chosen sample is based on an art college in a particular city, and the coverage is insufficient to draw conclusions that can be generalized. In order to perform large-scale research to produce more extensive results on this topic, it is intended to select more thorough samples in the future.

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CHAPTER 10

EXAMINING THE LINKS BETWEEN TIME MANAGEMENT AND ACADEMIC PROCRASTINATION IN HEALTH PROFESSIONS STUDENTS

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ABSTRACT:

Academic procrastination among students is a detrimental phenomenon with numerous adverse effects. In this study, academic procrastination among health professions students was compared to exam anxiety and time management skills. 281 Iranian students studying for health professions made up the study's sample. The factors were measured using the Tuckman Procrastination Scale, Time Management Scale, and Sarasin's Test Anxiety Scale. Additionally, the multivariate regression test and Pearson's correlation were run. Academic procrastination among students had a mean score that was greater than average. Time management and academic procrastination were shown to be significantly inversely correlated (r = 0.487, 0.01). Additionally, there was a highly significant positive connection between test anxiety and academic procrastination. According to the linear regression model, independent factors such as test anxiety and time management explained 32.6% of the variation in academic procrastination. The results of this study showed that procrastination in academic work was linked to exam anxiety and time management. To decrease students' academic procrastination, deliberate educational and psychological interventions are needed.

KEYWORDS:

Academic, Compared, Intervention, Management.

INTRODUCTION

Procrastination is one of the biggest problems that students at colleges and other higher education institutions face, according to recent studies. According to some researchers, kids procrastinate between 14% and 50% of the time. "The students' delay in doing their homework or making a decision to act is the definition of procrastination. Delays in completing coursework, producing articles, and exam preparation all fall under the category of procrastination. People's performance quality and mental and physical wellbeing suffer from procrastination. The most significant traits of students who procrastinate, according to studies, are poor academic performance, low academic life satisfaction, high levels of stress , poor well-being, poor time management, false beliefs about the nature of learning and teaching low exam scores, and poor self-regulation. Additionally, anxiety is a factor that significantly contributes to procrastination. Students frequently experience test anxiety, which is quantified using the Sarasin's Test Anxiety Scale. This factor has a detrimental impact on how prepared pupils are for tests. According to the findings of one study, test anxiety and academic procrastination are significantly correlated. However, a different study found a link between test anxiety and poor academic performance. Test anxiety also lowers one's level of subjective wellbeing.

Time management is a crucial ability for college students, according to research psychological research has stressed the link between psychological and behavioral traits and people's capacity for time management. The most crucial traits of students with good time management skills are understanding the worth of time, having control over time, and making

the best use of time Planning, goal-setting, and prioritizing tasks for business and personal life are essential to efficient time management and time utilization. Time management training improves sleep quality and reduces anxiety and depression, according to the findings of one study. Time management and academic motivation are highly positively correlated, according to other studies. Additionally, there is a markedly inverse relationship between time management and anxiety. It is crucial to understand how it is related to academic procrastination. The community's health is very much the responsibility of health professions students. Procrastination is common among them; therefore, this has a lot of bad effects. According to studies, academic procrastination should be given considerable consideration.

Academic procrastination is associated with academic failure and low levels of confidence according to the evidence. In this sense, it's critical to pinpoint the causes of academic procrastination. The major goal of this study was to determine whether academic procrastination among Iranian students studying for health professions is correlated with test anxiety and time management skills. In order to do this, the following queries were posed: Procrastination is the deliberate act of delaying or postponing something even though one is aware that doing so will have negative effects. It is a typical human experience to put off doing simple tasks or even essential ones like going to an appointment, turning in a report for work or school, or talking to a partner about a difficult subject. Because it interferes with productivity and is linked to sadness, low self-esteem, guilt, and feelings of inadequacy, it is frequently seen as a negative trait. However, it can also be seen as a sensible reaction to some demands that might have risky or unfavorable repercussions or necessitate waiting for fresh information.

Students from Western and non-Western cultures are observed to display academic procrastination, but for different reasons, from a cultural and social standpoint. Students from Western cultures often put off learning because they don't want to perform worse than they have in the past or learn less than they should have, whereas students from non-Western cultures often put off learning because they don't want to appear incompetent or untalented in front of their peers. It's also critical to take into account how procrastination may be impacted by various cultural ideas on time management. For instance, people tend to place a larger priority on finishing a task correctly before starting in cultures with a multi-active view of time. People in societies where time is perceived linearly often set aside a specific amount of time for a work and cease after that time has passed.

According to research on pigeons' delayed gratification behavior, procrastination is not just a human trait. It can also be seen in some other animals. Pigeons have been shown to favor difficult but delayed tasks over quick but hurried ones in trials, providing strong evidence for the concept of "procrastination" in pigeons. Philosophers, psychologists, and most recently behavioral economists have all studied procrastination. In a 1984 University of Vermont study on academic procrastination, 46% of the participants said they "always" or "nearly always" put off writing papers, while about 30% put off reading weekly assignments and studying for exams (by 28% and 30%, respectively). For the identical tasks, procrastination was an issue for over a quarter of the participants. However, 65% of respondents said they would prefer to cut back on the amount of time they put off writing papers, 62% said the same about studying for examinations, and 55% said they put off reading weekly assignments.

According to a 1992 study, 52% of the students who participated in the poll said they needed help with procrastination. A survey conducted in 2004 found that 70% of college students identified as procrastinators, but a study conducted in 1984 found that 50% of students would constantly postpone and regarded it a big problem in their lives. Procrastination was shown to be more common with tasks that were seen as unpleasant or as burdens than with tasks for

which the student believed they lacked the necessary skills for completion, according to a study done on university students. The topic of procrastination in business is also pertinent. A study from the State-of-the-Art journal titled "The Impact of Organizational and Personal Factors on Procrastination in Employees of a Modern Russian Industrial Enterprise Published in the Psychology in Russia" contributed to the discovery of the numerous variables influencing employees' procrastination behaviors. Among these are the rigor of performance reviews, the significance of their work within an organization, and their perceptions and opinions of management and/or higher-level decisions. It must be harmful, unnecessary, and delayed for a practice to be defined as academic procrastination, according to Gregory Schraw, Theresa Wadkins, and Lori Olafson's 2007 proposal.

In a 2007 study, Steel examined every prior attempt to define procrastination and came to the conclusion that it is "to voluntarily delay an intended course of action despite expecting to be worse off for the delay." Postponement and irrationality, according to Sabini and Silver, are the two main characteristics of procrastination. They contend that if there are valid justifications for the delay, delaying a task is not considered procrastination. In addition, a study by Podgorski and Beckmann found that learners' web navigation behavior exhibits consistent sequential patterns during procrastination. The temporal motivation theory is a method that combines a number of fundamental theories of motivation with meta-analysis research on procrastination. It condenses the three main procrastination predictors expectancy, value, and impulsivity into a mathematical equation.

DISCUSSION

Setting, sample, and sampling method

In western Iran the present investigation was carried out in institutions connected to Kermanshah University of Medical Sciences (KUMS). Nursing and midwifery, paramedical, health, pharmacy, dentistry, nutrition, and medicine were among the faculties represented. 281 students were determined to be the sample size. The stratified random sampling method was used to choose the samples, with each school constituting a strata. Using a random number table and basic random sampling, samples were chosen within each stratum. The questionnaires received a 100% response rate. Studying in the second semester or above and students' informed consent to participating in the study were inclusion criteria. Reluctance to respond to the questionnaire was the exclusion criterion [1], [2].

Equipment

The demographic information form, the Tuckman Procrastination Scale, the Time Management Scale, and the Sarasin Test Anxiety Scale were the instruments employed in this study. Gender, age, marital status, and educational information were all questioned on the demographic information form. Tuckman (1991) created the Tuckman's Procrastination Scale (TPS). The 16 items on this questionnaire are organized into a single factor. Tuckman has verified the accuracy and dependability of the English version of this scale. The single-factor structure of TPS has been verified, and it has been validated in Iran. The ideal values for this scale's validity and reliability have been provided by other studies. Cronbach's alpha was used in the current investigation to determine the internal consistency of this scale at the level of 0.89. The ratings for each item ranged from strongly disagree to strongly agree on a 5-point Likert scale. The range of scores was 16 to 64. A high grade revealed the student's intellectual laziness.

Total 14 items make up the Trueman and Hartley-created Time Management Scale (TMS). This instrument has two subscales: confidence in long-term planning (9 items) and everyday planning (5 items). The scale's reliability was 0.79 in the study by Trueman and Hartley's.

Additionally, it has been established that the Persian translation of TMS is accurate and reliable. Cronbach's alpha was calculated to be 0.77 in this study. A 5-point Likert scale is used to rate each response (1 being never and 5 being often). The overall score was between 14 and 70. High marks reflect the student's superior time management abilities. The 37-item Sara son's Test Anxiety Scale (STAS), created by Sarasin measures test anxiety. Using Cronbach's alpha Raju et al. determined the dependability of STAS to be 0.84. This scale's approvable degree of validity and reliability in Iran has been proven The STAS's Cronbach's alpha coefficient in the current study was 0.78. False answers received a score of 0, and right responses received a score of 1. Scores ranged from 0 to 37 overall. Low anxiety moderate anxiety and high anxiety are the three levels into which the scores are divided [3].

Data Gathering Technique

The KUMS national ethics commission (IR.KUMS.REC.1397.1049) granted authorization to perform the study after the start of the academic year. It was decided on a statistical sample, and the researchers went to KUMS's schools. The study's goals were given to the students, who were then requested to complete the questionnaire. The study only included the students who were willing to take part in it. The questionnaires were given out at random and collected when they were finished.

Statistical Analysis

With the help of IBM SPSS-18, data were examined. The characteristics of the participants and the means of the variables were determined using descriptive statistics (frequency, percentage, mean, and standard deviation). The study issues were examined using multivariate regression analysis and Pearson's correlation coefficient. The cutoff point for significance was 0.05. Under the number IR.KUMS.REC.1397.1049, the Ethics Committee of the Kermanshah University of Medical Sciences accepted this investigation. Participants were informed of the study's objectives and given guarantees about the privacy of their responses and demographic data. All individuals gave their written, informed consent to participate in the study. Additionally, they had enough time to do the surveys. A study on the connection between management and students in Iran was undertaken.

The results showed that the mean score for time management was just over the moderate level, and the mean score for exam anxiety was at a moderate level. Academic procrastination had a mean score that was higher than average. This result matched what other studies had found. According to the findings of Zhang et al. in this regard, 74% of Chinese students procrastinated on at least one academic task. According to Atalayin et al.'s research, procrastination affected 50% of Turkish dentistry students. Students with low levels of self-efficacy exhibited greater academic procrastination, according to the findings of a study by Guo et al. on nursing students in China. This information suggests that procrastination is a problem for students worldwide, including Iran. Additionally, a lot of academics have stressed how frequent and detrimental procrastination is among students. According to the current study, high student procrastination rates may be caused by a variety of elements, including a lack of interest in the subject matter, a lack of drive, and low self-esteem [4], [5].

In the current study, there was shown to be a substantial inverse association between time management abilities and academic procrastination. According to the findings of one study, students' level of engagement and participation in the learning activities rose when they had good time management abilities. Time management and academic motivation are significantly correlated, according to Ghiasvand et al. Increased time management abilities have been shown by Ping and Xiaochun to be crucial in lowering depression Because time management is a strategic skill and is crucial to achieving goals in both the professional and academic spheres, it is seen to be extremely significant in the learning process.

Procrastination, however, is the antithesis of time management and can result in failure in both students' academic and personal lives. Therefore, improving students' time management abilities may be crucial in lowering the procrastination problem.

This study found a substantial positive link between test anxiety and academic procrastination According to Balogun et al.'s findings, there is a link between test anxiety and poor academic performance in pupils. Therefore, university-level psycho-educational treatments are required in this area. Additionally, test anxiety and student performance were found to be negatively and significantly correlated by Zhang and Henderson. The findings of the study by Steinmeier et al. also demonstrated that changes in academic performance and subjective well-being are predicted by anxiety, which is a significant component of test anxiety. One of the biggest obstacles students have with overcoming test anxiety is a lack of exam preparation and concentration. Students' test anxiety increases when they put off studying for tests. Academic success and test anxiety are inversely correlated, according to studies.

Procrastination and fear of failure have a highly substantial positive association, according to research by Zhang et al. Additionally, identifying the factors that influence test anxiety and fear of failure is crucial for addressing test anxiety in kids. The majority of students are terrified of their final exams. In order to lessen their worry, it may be helpful to evaluate how well they did during the learning process. Anxiety is a psychological factor with numerous root causes. The relationship between test anxiety and procrastination was looked into in the current study. Given that end-of-semester exams are when students are most worried about their scores, using formative evaluations in addition to summative exams can help teachers reduce exam anxiety in their students. Therefore, by allocating a portion of the grade to formative evaluations, educators might lessen their students' exam anxiety [6]–[8].

Restrictions

Three restrictions applied to this study. This study was cross-sectional and correlational in nature. As a result, it is impossible to establish the variables' causal link. To gather information, a self-report questionnaire was used. As a result, the accuracy of the data may have been impacted because it was unable to independently check the participants' responses. Academic procrastination, time management, and test anxiety are all influenced by a variety of variables, including personal, social, psychological, and academic ones that were not looked at in this study. Psychological vantage point Procrastination may result from the pleasure principle; people may choose to put off difficult chores to avoid experiencing unpleasant feelings. A study by Rinaldi et al. suggested that procrastination may be influenced by quantifiable cognitive deficits. They get increasingly anxious as the deadline for their procrastination aim approaches, and they may chose to procrastinate more to reduce this tension According to some psychologists, this habit serves as a coping technique for the tension that comes with beginning or finishing any activity or choice. In 2010, Piers Steel said that studies on procrastination should concentrate on impulsiveness and that worry is just as likely to cause people to start working early as it is late. In other words, only impulsive people will be delayed by anxiety. Academic procrastination among some college students has been linked to "performance-avoidance orientation," one of the four factors in the achievement orientation paradigm, according to Holly McGregor and Andrew Elliot (2002) and Christopher Wolters Students with performance-avoidance orientations have been shown by Andrew Elliot and Judith Harackiewicz (1996) to be more preoccupied with comparisons to their peers. These pupils delayed starting their work out of a desire to avoid appearing incompetent or to adopt a mask of proficiency for a task in front of their colleagues.

Because achievement orientation is closely connected with the cultural values and beliefs of the majority of students, Gregory Arief Liem and Youyan Nie (2008) discovered that cultural

traits have a direct impact on achievement orientation. Across thirteen different societies, Sonja Dekker and Ronald Fischer's (2008) meta-analysis found that students from Western cultures are typically more motivated by "mastery-approach orientation" because the degree of incentive value for individual achievement is strongly reflective of Western cultural values. In contrast, it has been discovered that most pupils from Eastern cultures are "performance-avoidance oriented." They frequently work to uphold a favorable perception of their skills, which they demonstrate when speaking in front of their colleagues. Furthermore, Hazel Rose Markus and Shinobu Kitayama (1991) demonstrated that people in non-Western cultures are typically encouraged to join diverse interpersonal interactions and to fit in with those that are meaningful to them rather than standing out via their accomplishments [9]–[11].

These differences were supported by Sushila Niles's (1998) study of Australian and Sri Lankan students, which showed that Australian students frequently pursued more autonomous goals whereas Sri Lankan students typically desired more collaborative and social ones. The majority of Chinese and Japanese students, according to several studies by Kuo-Shu Yang and An-Bang Yu (1987, 1988, 1990), were judged on how well they fulfilled their obligations and responsibilities to their family network rather than how well they did on their own. Due to their emphasis on collaboration within the family and community, collectivism and Confucianism have also been demonstrated by Yang and Yu (1987) to be particularly powerful motivators for achievement in many non-Western cultures. The individual, influenced by these cultural norms, is said to intuitively detect the level of pressure that distinguishes his or her component of accomplishment orientation.

CONCLUSION

Students studying for health professions had academic procrastination scores that were higher than the national average in the current study. Academic procrastination was inversely correlated with time management. Additionally, there was discovered to be a substantial positive association between test anxiety and procrastination in the classroom. According to the regression analysis's findings, procrastination in academic work was predicted by test anxiety and time management. Academic procrastination can be reduced in part by improving time management abilities and lowering test anxiety. According to the available data, procrastinating seriously hinders students' academic success. Therefore, enhancing time management abilities and taking steps to lessen exam anxiety will help students procrastinate less in their academic work. Therefore, educational planners and managers in universities can take these findings into account. Future research should look into the social, psychological, and educational aspects that affect time management, test anxiety, and academic procrastination.

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CHAPTER 11

COMPUTATIONAL ANALYSIS OF THE RELATIONSHIP BETWEEN PHYSICAL ACTIVITY AND ACADEMIC PERFORMANCE IN A MULTIMODAL ENVIRONMENT

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ABSTRACT:

Health has long been acknowledged as the key component to success in any endeavor, whether it be professional or personal. People who regularly engage in physical activity and are in good health have more potential in both their personal and professional life than those who do not. There are numerous cutting-edge studies that demonstrate the value of physical activity in supporting treatment for pre-existing conditions and in enhancing human health in general. Our study aims to determine the relationship between the students' participation in physical activity and how that activity affects their likelihood of achieving academic success. The study uses computational methods to examine the impact of physical activity on middle school students' academic performance. The study processes the data using data mining techniques. Before applying computational approaches to the subjects (participants in terms of the study's sample), the computational techniques are applied in a multimodal environment where the surrounding environmental parameters are taken into account. Data on numerous physical activities, including aerobic fitness, operating, playing, and involvement in extracurricular activities, have been taken into account in this cross-sectional study. After middle school kids' data is collected in a genuine multimodal environment, data preprocessing is carried out to deal with the missing values. Regression and bootstrapping methods are then used to analyze the data and make a prediction using mathematical methods in a step-by-step manner. Academic success and physical activity are evaluated for their relationship. The conclusion suggests that physical activity increases the likelihood that academic and extracurricular endeavors will be successful.

KEYWORDS:

Component, Demonstrate, Existing, Involvement.

INTRODUCTION

Physical activity has decreased in classrooms as the emphasis on academic achievement has increased. The most crucial factor affecting human performance in all areas is health. Diet and exercise both have a significant impact on a person's overall health. In the United States, childhood obesity is a major public health concern that has been linked to both physical health issues and lower academic achievement (AA). Physical activity (PA) and aerobic fitness can enhance the health and AA of kids. However, knowledge of how the variables (PA, aerobic fitness, and attention) interact both collectively and independently to affect AA is still limited. There have been some discrepancies in studies examining the connection between PA, aerobic fitness, and AA; these discrepancies could be attributed to measurement and methodology problems (e.g., measuring only PA or aerobic fitness and insufficient control of socio-economic variables); results have either been positive or negative associations. Rarely are reports of the latter made.

In order to better understand the relationship between PA and AA among middle school kids, this study set out to do just that. Any voluntary skeletal muscle-driven movement that

involves an energy cost is referred to as physical activity. All activities, regardless of intensity or time of day or night, can be considered physical activity. Both physical activity and unplanned activities incorporated into everyday routines are included. This combined activity may include chores, working, cleaning, using active transportation, etc. but may not be planned, structured, repeated, or intended to enhance fitness. Increased physical exercise can improve physical and mental health as well as cognitive and cardiovascular health. Lack of physical activity is linked to a number of detrimental health effects. At least eight investments are made to promote physical activity at the population level, including whole-school initiatives, active transportation, active urban design, healthcare, public education and mass media, sport for all, workplace initiatives, and neighborhood-wide initiatives.

Exercise boosts energy expenditure and plays a crucial role in maintaining a healthy weight for more information, see the Summermatter cycle. Numerous studies have shown the potential benefits of exercise in the treatment and prevention of a wide range of illnesses, including obesity Irritable bowel syndrome and Physical activity has been shown to decrease anxiety as a condition individual physical activity, without continuity, anxiety as a personality trait (constant performance, "exercise" of certain physical activities), and psycho-physiological signs of anxiety (blood pressure and heart rate) (moderate physical activity can lead to a decrease in the intensity of short-term physiological reactivity and encourage recovery from short-term physiological stressors) (Biddle et al., 2 Long and short walks were shown to be the most helpful for those with a severe depressive episode and anxiety disorders; "strenuous" gymnastics and riding were found to be the most helpful for people with drug misuse problems, bipolar disorder, and frequent psychotic decompensation. The term "multimodal human-computer interaction" refers to "interaction with the virtual and physical environment through natural modes of communication.

This suggests that multimodal interaction facilitates a more liberated and natural communication, bridging users with automated systems in both input and output. Multimodal systems, in particular, can provide a flexible, effective, and usable environment that enables users to interact through input modalities like speech, handwriting, hand gesture, and gaze, and to receive information from the system through output modalities like speech synthesis, smart graphics, and other modalities that are appropriately combined. Then, in order to enable their interpretation, a multimodal system must recognize the inputs from the various modalities, combining them in accordance with temporal and contextual constraints. Multimodal fusion is the term for this process, which has been the focus of numerous studies from the 1990s to the present. The system interprets the fused inputs. Naturalness and flexibility can result in multimodal ambiguity, which is typically brought on by imprecision, sounds, or other similar circumstances, and can therefore result in more than one interpretation for each separate modality (channel) and for their simultaneous use. Numerous approaches have been put forth to resolve uncertainties. Finally, the system reverts to the user outputs via the numerous modal channels (disaggregated), arrayed in a fission-like fashion.

Adequate computational resources can be provided through the widespread usage of mobile devices, sensors, and web technologies to handle the complexity suggested by multimodal interaction. An opportunity is to use the cloud to involve shared computational resources in managing the complexity of multimodal interaction. In actuality, cloud computing enables the delivery of shared, scalable, flexible computer resources that can be automatically and dynamically allocated and released. Two significant groups of multimodal interfaces have converged, one focused on combined input/output and the other on alternative input techniques. The initial set of user interfaces integrated a number of input methods other than the standard keyboard and mouse, including speech, pen, touch, manual gestures, gazing, and head and body movements. The most popular of these interfaces combines a spoken modality

with a visual modality (speech recognition for input, speech synthesis, and recorded audio for output, for example, a display, keyboard, and mouse). However, additional modalities may be used, such as pen-based input or haptic input/output. Human-computer interaction (HCI) research focuses on multimodal user interfaces.

Increased usability is a benefit of several input modalities because the drawbacks of one modality are made up for by the advantages of another. A word could be challenging to type yet simple to pronounce on a mobile device with a small visual interface and keypad (such as Poughkeepsie). Think about how you might use these identical devices or set-top boxes to browse and search digital media catalogs. To preserve a sterile atmosphere, members of the surgical team in one real-world scenario retrieve patient information verbally. Patient information is then displayed in near real-time audibly and visually to maximize comprehension. User interfaces with multimodal input have effects on accessibility. People with a range of disabilities can use a well-designed multimodal application. Users who are blind or visually challenged primarily use voice input with occasional keypad input. Users who are hard of hearing rely primarily on visual input with minimal verbal input [1]–[3].

Others will employ the proper modalities as needed since they are "situationally impaired" (such as when they are driving, wearing gloves in a noisy environment, or entering a credit card number in a public area). A multimodal application, on the other hand, that demands that users be able to use all modalities is extremely badly conceived. The second category of multimodal systems primarily uses visual and audio cues to provide users with multimedia displays and multimodal output. In addition, interface designers are also beginning to use other senses, like touch and smell. Redundancy and synergy are two benefits that the multimodal output system is said to provide. The information is combined and relates to numerous elements of the same process when it is provided in many ways. An improved bandwidth of information transport is made possible by using many modalities to process the same information. Multimodal output is now utilized mostly to enhance the mapping between communication medium and content and to help attention management in environments rich in data where operators must pay close attention to visual cues.

The development of natural mappings between modalities and the information and tasks is a crucial stage in the design of multimodal interfaces. The auditory channel differs from the visual channel in a number of ways. It is always reserved, omnidirectional, and fleeting. One type of auditory information that garnered a lot of attention was speech output. The use of speech has been subject to a number of rules. According to Michaelis and Wiggins (1982), speech output should be used for brief, uncomplicated messages that won't be referenced again later. Additionally, it was advised that speech should be prepared beforehand and demand a quick reaction. In the late 1950s, the sensation of touch was used for the first time as a communication tool. It is not just a viable communication route, but also one that is special. The sense of touch is proximal it detects objects that are in contact with the body and bidirectional, supporting both perception and acting on the environment. In contrast to vision and hearing, the two classical senses used in HCI.

Examples of auditory feedback include speech output for displaying navigational advice in automobiles and speech output for alerting pilots on modern airplane cockpits. Auditory icons in computer operating systems that indicate users' activities (e.g., deleting a file, opening a folder, error) are also examples of auditory feedback. Examples of tactile signals include the stick shaker on modern aircraft that alerts pilots to an oncoming stall and the vibration of the turn-signal lever to warn drivers of a car in their blind spot.

DISCUSSION

Middle school and kindergarten pupils are most impacted by PA. Children who are physically active often have better PA, aerobic fitness, and cardiovascular characteristics. Task-dependent, the effect of PA on cognitive capacity was most pronounced in perceptual skills, then IQ. Previous research has demonstrated that PA has positive effects on angiogenesis, oxygen saturation, glucose delivery, cerebral blood flow, and neurotransmitter levels, all of which are beneficial to children's cognitive performance. In a study of 248 kids (ages 8 to 11), VO2 peak, a gauge of aerobic fitness, was found to be correlated with PA in both boys and females. However, there has never been a study that compared the effects of PA, physical activity, and alcohol use. The relationships between PA and AA have been assessed in several models. Executive functioning and academic progress may be hampered by PA, increased physical exertion, and social involvement. It does not, however, statistically demonstrate any potential collinearity. According to some experts, there is no association or a bad relationship among PA and AA. Additionally, the link among PA and aerobic capacity suggests that mediation is necessary for AA.

The authors of reference indicate that the impact of PA on aerobic fitness may also have an impact on AA. An indication of physical performance is aerobic fitness. According to certain research, aerobic exercise can not only increase hippocampus blood flow to the brain but also support the growth of the brain's structure and function. It is still unclear how these measurements PA, aerobic fitness, and cognitive ability interact and subsequently affect AA. It has never been investigated how attention, a key component of cognitive performance, relates to PA and AA. It might be impossible to achieve and maintain at least a modest PA level without better levels of attention and cardiovascular fitness. Additionally, there is some evidence to support the notion that, in contrast to physical activity, these physiological characteristics are linked to scholastic success and cognitive performance.

In reference authors conducted a survey to compile findings from meta-analyses on the impact of PA on AA in school-age children and teenagers. According to their outcomes, PA had no or minimally beneficial impact on AA. Regular PA had a moderately good impact on AA, whereas intensive PA had no positive effects. Authors in reference draw the conclusion from their research that teenagers' AA and physical fitness have a positive correlation. Additionally, they draw the conclusion that cardio-respiratory fitness is directly related to the physical fitness requirements for AA. The authors of reference point out two significant gaps in the research done to associate PA with AA: determining the amount and type of PA required. The best kind of PA to enhance academic results is also a mystery. Reference authors reported that although PA's overall impact on AA was leaning toward being beneficial, it was less than the sum of its indirect effects due to mediators. The sum of the effects of sadness and self-confidence is an indirect effect, although the self-esteem factor was revealed to be the most effective mediator between PA and AA. As a result, the current study included attention, aerobic fitness, and other potential parameters as mediators and sought to investigate the link between PA and AA.2.4.4. Focused Attention [4], [5].

The Stroop test was used to measure selective attention. The Stroop test is a psychological tool used to assess reaction time delay. It shows the adaptability of thought processes The Stroop test was designed to assess cognitive flexibility and selective attention. Our study used two different types of paper cards to evaluate focused attention, and each card included stimuli set against a white background in accordance with previous research guidelines. Each color's name was written in black ink on card A. Color names did not match the ink color on card B, which served as an interference card (for example, black words printed in purple, green, or orange). The words on card A were to be read out by participants as rapidly as they could. They have to specify the color of the word that has been printed, not the word itself,

for card B. Both selected attention 1 (card A) as well as selective attention 2 (card B) were represented by the amount of time it took to complete the activity (all errors were quickly fixed without pausing the stopwatch).

Alternating between focused and unfocused attention

The trail making test (TMT) was used to examine both alternate and sustained attention. Partington created the initial test. On a sheet of paper or a computer screen, 25 successive targets must be connected in a manner akin to a child's "connect-the-dots" puzzle. The exam is divided into two sections: the first section (TMTA) asks participants to identify the numbers in order, and the second section (TMTB) asks the child to alternate between letters and numbers. The tests TMTA and TMTB measure alternated and sustained attention, respectively. Prior to the test, each participant practiced, and the time allotted for the test was set. The examiner instantly fixed mistakes without pausing the chronometer. The sustained focus and alternate attention are both better the shorter the duration [6]–[8].

Academic Success (AA)

Based on the pupils' math test results, AA was calculated. The New York Test, created by the Education Department of the State of New York to gauge pupils' proficiency in mathematics, was used. The grade 7 edition had 30 questions, whereas the grade 8 edition had 27. During the physical education (PE) courses, the pupils were informed about the study. Parents received consent papers via the pupils, and they had the opportunity to inquire before the study began. In PE courses, the children gave their consent. Participants' height, weight, and level of aerobic fitness were assessed during the first week of the study (PACER). The PA test (i.e., steps and MVPA) was carried out during the second week, and measurements were taken for 7 days in a row. Beginning on Monday, all students were compelled to wear pedometers from the moment they entered the building until they went to bed. The kids' concentration was also measured. The Stroop and TMT tests were given to the participants, and their math exam results were determined during their physical education classes. Using information on height and weight, BMI was computed.

Analysis of Data

By using SPSS 26.0 (IBM the company, Armonk, NY, USA), all data were examined. The least statistically significant distinction t-test, multivariate regression, variance analysis, and BA were used. These techniques might aid in our comprehension of the strength of the presumptive positive association between PA and AA. Our study has enough statistical power since we used a sample size of 176 kids, which was representative of a normal public middle school in Utah. The sample size was also chosen based on the number of schools that agreed to take part and the numbers of students in each. The association between arithmetic test scores of students in grades 7 and 8 and MVPA, the number of steps, cardiovascular health, selective attention 1, selective attention 2, sustained attention, and switching attention were examined using MR analysis; the resulting regression equation was then determined. Progressive stepwise regression was used to analyze the data, and the results were reported as 95% confidence intervals.

The expected non-normality of the sampling distribution of the mediation effect was taken into account while using BA to analyze mediating effects. The mediating relationship was estimated for each variable based on the immediate and cumulative impacts of independent, dependent, and mediating variables.3.2. Mathematics Scores and Multiple Linear Regression Analysis of PA and Potential Mediating Variables We measured each student's indicators using experimental research, which resulted in the categorical variable of BMI and other continuous factors. The dependent variable Y was math and the independent variables were

X1 was MVPA, X2 was steps, X3 was aerobic fitness, X4 was selective attention 1, X5 was selective attention 2, X6 was sustained attention, X7 was alternating attention, and X8 was BMI with dummy variables X8 being severe thinness, X8 being thin, X8 being normal, X8 being overweight, and X8 being obese. A MR model was built using regression analysis to assess the relationship between PA, putative mediating variables, and overall academic performance.

Steps and MVPA were often used by seventh and eighth graders, and they consistently had a positive impact on math test performance. Sustained attention had an impact on math scores in males; BMI and selective attention 1, 2, and alternating attention were taken out of the equation. The following is the form of the multiple LR's dependent and independent variables for men: It might account for 47.7% of the dependent variable's overall variation Therefore, to a certain extent, math score might be predicted using MVPA stages and sustained attention. The progression of male math scores was positively impacted by MVPA steps and sustained attention. The multiple LR's final equation is represented as follows in females [9]–[11].

We have investigated the relationship between PA and AA through empirical research, and we have discovered that PA may have some influence on students' mathematics performance. Math results were linked to MVPA steps and maintained attention in males, according to the multiple LR equation. The multiple LR equation in females revealed a relationship between math test results and steps and MVPA. In conclusion, the three types of attention selective attention, sustained attention, and alternating attention do not mediate the direct impact of PA on AA. Our findings may be explained by the fact that people with more agile bodies are more flexible and can complete more steps. Higher levels of mental ability and hand-eye coordination are needed for mathematics. It takes mental processing and the use of calculators, paper, and pens to answer mathematical issues.

Additionally, MVPA affects math ability since appropriate PA may enhance blood circulation, which would fully mobilize the activities of a number of bodily organs, including the brain. The central nervous system benefits from PA in a number of ways, including increased adaptability and coordination with other systems, improved ability to respond and maintain the equilibrium of the interaction between excitatory and inhibitory processes, and improved regulation of the central nervous system and body's muscle activity. Individuals may become more energized as a result of these effects, which would increase learning effectiveness. Additionally, PA might aid in calming down pupils' emotions, allowing them to handle more academic pressure. Because physical activity and fitness helped children's brains develop in terms of structure, function, and cognitive ability, active children and adolescents are more motivated to improve their AA before, during, and after school, according to a team of experts who studied the significance of PA in school-age children. Middle school is also the prime time for academic and physical growth. Because they have a lot of free time, pupils are not thought to have a very heavy learning load. Additionally, the longer someone participates in PA, the more exercise their body receives and how much better their physical condition is, which in turn gives them the necessary energy and physical strength for learning. Exercise has the potential to improve extracurricular activities for kids since it triggers the production of several neurotransmitters, including dopamine and endorphin, which improve memory, intellectual development, and happiness. A positive view or an upbeat mood might also help you learn more effectively.

Because students' exercise preferences and willingness to exercise are largely unaffected by BMI and aerobic fitness, these obesity indicators have no bearing on math test scores. Instead, the ability to solve mathematical problems is more closely related to the comprehension and application of mathematical knowledge. This study's research of sex

differences revealed conflicting findings, and sustained attention levels failed to demonstrate a mediation influence. Only under specific circumstances did sustained attention accurately predict mathematical performance direct effect and indirect effect. Additionally, there are sex differences in persistent attention, which may help to partially explain the findings of this study. Furthermore, the fact that sustained attention is extremely limited may be a contributing factor in the absence of the mediating effect. An individual's attention span can only withstand interference-free conditions for 20 to 22 minutes. The effect of sustained attention is very restricted because the time needed to measure AA is significantly longer than the person's attention span.

As a result, there was no significant influence of sustained attention level in this investigation. Additionally, selective switching attention took the form of alternating attention. Divergent attention did not significantly affect the students' learning process in our study. Students typically have to deal with learning material or taking exams. The requirement for attention distribution and attention diversion are not great. The time it takes someone to finish a color test can only be an indication of how sensitive they are to color. As a result, math test results are not related to Stroop test outcomes. There may be a little correlation between selective attention and AA in the case of selective attention. Selective attention, however, could not be used to predict AA, which is consistent with the results of our study. Additionally, even if working memory is used as a mediating variable, selective attention has an indirect impact on working memory when it is required, despite not having a direct impact on AA. As a result, as mediating variables of PA, sustained attention, alternating attention, and selective attention may all have an impact on AA. We did not discover any mediating effects between PA and the three types of attention, according to the BA, though. Future research on additional mediating factors between the three types of attention and AA is therefore necessary to determine if selective attention, sustained attention, and alternating attention have direct or indirect impacts on PA and AA. The study does have certain restrictions. First of all, our study's sample consisted of just one school. For broader transferability, this study would need to be reproduced in additional US cities and regions. A more accurate statistical analysis might also be achieved by exploring and taking into account additional PA and psychology-related aspects.

CONCLUSION

The selected population was the subject of the empirical research conducted for this study. The study's conclusions indicate that PA has a direct impact on AA. Between PA and the three types of attention—selective attention, sustained attention, and alternating attention there are no mediating effects. Between PA and the three types of attention, namely, selective attention, sustained attention, and alternating attention, no mediation effects are seen. Math scores were linked to MVPA and sustained attention in males, according to the multiple LR equation. The multiple LR equation in females revealed a relationship between math test results and steps and MVPA. The aforementioned findings lead to the conclusion that middle school children' academic performance is positively impacted by the brief period of physical activity they get in PE classes and other sports-related activities. It is discovered that there is a significant relationship between the participating subjects' overall performance and their physical activity levels. This is because physical activity causes the body to release chemicals that lower stress and improve concentration. The middle school students have had more success as a result in terms of their math test scores. This study is applicable to all age groups, but we are focused on school-age children because, according to the research study, physical activity has a tremendous impact on academic achievement. The analysis of biomarkers demonstrates the importance of physical activity on students' overall performance. Regression was one of the computer methods that was used to forecast

performance based on participant input activity data. The focus of the upcoming study will be on examining the effects of physical activity on the participants while taking into account the most pertinent biomarkers of health analysis. In order to make definitive statements about how physical activity affects academic performance, we will present more advanced computational tools and use various datasets. In the future, we'll look into even more PA and psychology-related issues.

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