ISSN Print: 3006-4694

ISSN Online: 3006-4708

SOCIAL SCIENCE REVIEW ARCHIVES

https://policyjournalofms.com

PERCEPTION OF SECONDARY SCHOOL STUDENTS REGARDING COGNITIVE AGILITY

Zainab Qamar[1], Dr. Muhammad Aamir Hashmi[2]

[1] Ph.D. Scholar at Institute of Education and Research, University of the Punjab, Lahore, Pakistan, Research Associate, Faculty of Social Sciences and Humanities, Minhaj University Lahore, Pakistan, Email: zainabqamar10@gmail.com

[2] Associate Professor and Chairman, Centre for Institutional Development & Policy Analysis Institute of Education and Research, University of the Punjab, Lahore, Pakistan, Email: aamirhashmi.ier@pu.edu.pk

Abstract

Sustainable Development Goal-4 (SDG4) emphasizes quality education by nurturing 21st century skills like communication, collaboration, and information literacy, enhancing cognitive agility of students. The proposed study aims to find the perception of secondary school students regarding cognitive agility and to find the difference of male and female students' cognitive agility at the secondary school level. The present study was descriptive in nature. The sampling technique used to choose the schools was cluster sampling in which the population is first divided into groups (clusters). The clusters were based on gender and age group. A self-developed scale was used to measure the cognitive agility of students. The validity of the instrument was assured through expert reviews. To check the internal consistency of the instrument, pilot testing was done by collecting data from 60 students. The researcher visited the selected districts physically for data collection. The collected data was analyzed by using descriptive statistics (mean, frequency, and standard deviation) and inferential statistics (independent samples t-test) to find the difference among the perception of male and female students on their cognitive agility. The findings reflect a relatively consistent level of cognitive agility among the students in these areas. It was also seen that the gender did not have a meaningful impact on cognitive agility of secondary school students.

Keywords*:* *Students' Perception, Secondary School, Cognitive Agility.*

Introduction

In Pakistani schools, the absence of comprehensive cognitive development programs has led to a concerning gap in essential skills among teenagers. Traditional educational approaches often emphasize rote learning, which focuses on memorization rather than fostering a deep understanding of subjects. Consequently, students may lack critical thinking skills, problem-solving abilities, and practical knowledge application. The lack of emphasis on these skills hampers teenagers' ability to adapt to real-world challenges and navigate complex situations effectively (Sethi, 2016). The absence of a supportive environment to nurture positive attitudes, resilience, and a growth mindset further compounds the problem. In Pakistan, the challenges within the education system, such as rigid structures, standardized testing emphasis, and urban-rural resource disparities, hinder teenagers' creativity, innovation, and access to quality education. These limitations perpetuate socioeconomic inequalities and hinder holistic development. Integrating modern pedagogical approaches and fostering collaboration among stakeholders are crucial steps toward reform. By investing in teacher training, curriculum

redesign, and infrastructure development, Pakistan can create an environment conducive to cognitive, soft skills, and socio-emotional development among teenagers, thus empowering them to contribute meaningfully to society (Sethi, 2016).

Background of the Study

Sustainable Development Goal-4 (SDG4), which stands for Quality Education, is one of the United Nations Sustainable Development Goals. It aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. SDG4 and its emphasis on quality education play a pivotal role in enhancing the cognitive agility of students at the secondary school level. The link between SDG4 and the cognitive agility of students at the secondary school level is significant and multifaceted. SDG4 emphasizes providing access to quality education for all, including marginalized and vulnerable groups (Zhanna & Nataliia, 2020). Quality education promotes cognitive development by fostering critical thinking, problem-solving skills, and creativity (Amjad et al., 2024, a, b, c). Engaging and interactive teaching methods enhance students' cognitive abilities, enabling them to analyze situations, think critically, and apply knowledge to real-world scenarios (Dello-Iacovo, 2009).

In the context of the school and classroom setting, cognitive agility among teenage students refers to their ability to swiftly adapt and respond to various academic challenges and intellectual tasks (Amjad et al., 2023, a, b, c). It involves the capacity to think critically, solve problems, and process information rapidly and efficiently. Teenagers with high cognitive agility excel at analyzing complex concepts, making connections between different subjects, and approaching problems from multiple angles (Practera, n.d.).

Cognitive agility in the classroom means more than just academic excellence; it encompasses the students' ability to learn, unlearn, and relearn information effectively (Ong et al., 2024). It involves being open to different perspectives and approaches, allowing students to explore a wide range of ideas and solutions. Teenagers with cognitive agility readily engage with unfamiliar topics, seek out diverse learning experiences, and are comfortable tackling ambiguous or uncertain situations. They can quickly grasp new concepts, adapt their thinking patterns, and apply their knowledge creatively (Amin et al., 2024). Moreover, they are adept at integrating lessons from various subjects, enabling them to approach interdisciplinary challenges with a well-rounded perspective (Qureshi et al., 2023). In essence, cognitive agility empowers teenage students to become agile thinkers, capable of navigating the complexities of the modern educational landscape and preparing them for future academic and real-world challenges (Practera, n.d.).

In a nutshell, agility is a set of complex skills that enable us to learn something new in one place and then apply what we learned elsewhere, in a wholly different situation. Learning agility is our ability to learn, adapt, unlearn, and relearn to keep up with constantly changing conditions in the workplace (Korsten, 2022).

Cognitive Agility

Cognitive agility, the ability to rapidly adapt and learn in complex, uncertain, and changing situations, has gained prominence in contemporary psychological literature. As the world becomes increasingly dynamic, the capacity to think flexibly, innovate, and solve problems creatively has become a crucial skillset. Cognitive agility extends beyond traditional measures of intelligence, incorporating adaptive thinking, openness to new experiences, and the ability to shift cognitive strategies promptly. In recent years, researchers have delved into understanding the nature of cognitive agility, its developmental trajectory, and its impact on various aspects of life (Williams & Nowack, 2022).

Cognitive agility is often defined as the capability to approach tasks and challenges with an open mind, quickly adjust to new information, and find innovative solutions (Tabbasam et al., 2023; Tabassum et al., 2024). Studies (Smith & Sheya, 2010) have identified its core components, including mental flexibility, creativity, adaptability, and the ability to learn from experience. Cognitive psychologists emphasize the role of executive functions, such as working memory and inhibitory control, in facilitating agile thinking (Ward et al.1999).

Research exploring cognitive agility in children and adolescents suggests that it undergoes significant developmental changes. Piagetian and neo-Piagetian theories have been influential in understanding the progression of cognitive flexibility in childhood. Longitudinal studies (Ezni & Mondam, 2015) indicate that cognitive agility continues to develop through adolescence, influenced by both genetic and environmental factors. Environmental enrichment, exposure to diverse experiences, and educational interventions have been linked to enhanced cognitive agility in young individuals.

Educational psychologists have explored the relationship between cognitive agility and learning outcomes. Studies (Rudolph et al., 2018) indicate that students with high cognitive agility adapt more effectively to different teaching methods, engage deeply in learning tasks, and demonstrate superior problem-solving skills. Integrating agile thinking exercises and active learning strategies into classrooms has been shown to enhance students' cognitive flexibility and creativity.

In organizational psychology, cognitive agility is viewed as a crucial competency for navigating modern work environments. Agile employees exhibit a willingness to learn, adapt to changes, and collaborate effectively with diverse teams. Research (Kim, Kim & Kim, 2013) demonstrates that organizations promoting a culture of cognitive agility are more innovative and resilient in the face of market shifts.

Studies (Jian, 2022) exploring the intersection of cognitive agility and mental well-being highlight its role in stress management and emotional regulation. Individuals with high cognitive agility tend to perceive challenges as opportunities for growth, leading to reduced anxiety and enhanced psychological resilience (Kashdan & Rottenberg, 2010).

The literature underscores the multifaceted nature of cognitive agility, its developmental trajectory, and its far-reaching implications in education, the workplace, and psychological well-being. As a dynamic construct, cognitive agility continues to captivate researchers, educators, and practitioners, driving ongoing investigations into its mechanisms, measurement, and practical applications (Williams & Nowack, 2022).

Statement of the Problem

In the realm of secondary education, finding the perception of students regarding cognitive agility is crucial for shaping effective learning strategies. Cognitive agility, denoting the capacity to swiftly adapt, innovate, and tackle novel challenges, has gained significant attention in educational psychology.

In the rapidly evolving landscape of secondary education, students are required to continuously adapt to new learning environments, tools, and challenges. Cognitive agility, which encompasses the ability to think flexibly, innovate, and efficiently solve problems, is increasingly recognized as a key factor in academic success. Despite its importance, there is limited research exploring secondary school students' perceptions of their own cognitive agility, particularly in relation to how they navigate various academic demands and challenges. Understanding these perceptions is critical for developing educational strategies that foster adaptable, innovative thinkers who can thrive in dynamic learning environments.

Without insights into students' views on their cognitive agility, educators and policymakers risk implementing learning strategies that fail to address the cognitive flexibility needed in today's educational systems. This research seeks to fill the gap by investigating how secondary school students perceive their cognitive agility, which in turn could inform teaching practices, curriculum development, and student support mechanisms aimed at enhancing cognitive flexibility in education.

Objectives of the Study

The research study was attempted;

1. To find the perceptions of secondary school students regarding cognitive agility
2. To find the difference among the male and female students' cognitive agility at secondary level within age range 14-16 years

Research Questions

Following were the research questions of the study:

1. What is the level of cognitive agility among secondary school students aged 14-16 years?
2. What is the difference among the male and female students' cognitive agility at secondary level students aged 14-16 years?

Significance of the Study

This study holds significant value in the field of educational psychology and secondary education, particularly in the development of strategies that enhance cognitive agility among students aged 14-16 years. Understanding students' perceptions of their cognitive agility will offer valuable insights into how they approach problem-solving, innovation, and adaptability in academic settings. These findings can guide educators in designing curricula and teaching methodologies that promote cognitive flexibility, ultimately helping students navigate the complexities of modern education more effectively.

Furthermore, by investigating the differences in cognitive agility between male and female students, this study can contribute to the understanding of potential gender-based variations in cognitive flexibility. This information can help educators tailor learning strategies that address the specific needs of both male and female students, fostering equitable learning environments. The research is also beneficial for curriculum developers and policymakers, as it provides data-driven insights that can inform the design of educational programs aimed at improving students' cognitive agility. Enhancing this skill set is critical for preparing students to meet the challenges of future academic pursuits and the demands of an increasingly complex world.

Research Methodology

The study followed positivist research paradigm. The research design was descriptive research in order to find the students' perception regarding cognitive agility. All the secondary school students enrolled in 9^{th}-10^{th} grade within the age range 14-16 years in Punjab were the population of the study. The sampling framework multistage sampling. In the first stage, simple random sampling is utilized to select three districts out of a total of 36. The chosen districts are Lahore, Dera Ghazi Khan, and Kasur. In the second stage, the process shifts to disproportionate stratified sampling, aimed at refining the sample within each selected district. For both male schools in Lahore and female schools in Kasur, 30 schools are selected using this method, ensuring a balanced representation. Each district contributes 10 schools to the sample. To further ensure the sample's representativeness, 50 students aged between 14-16 years are randomly selected from each chosen school. This step ensures that the sample includes a diverse range of students within the specified age bracket from different districts.

To measure the cognitive agility of secondary school students, a self-developed 5-point Likert-type scale was employed, focusing on five key factors. These factors included: Problem-Solving Skills, which assess the students' ability to effectively identify and resolve challenges; Creativity, which measures their capacity to generate innovative ideas; Learning Speed and Working Memory, gauging how quickly students can acquire and retain new information; Decision Making, evaluating their ability to make informed choices in complex situations; and Open-Mindedness, which reflects their willingness to consider different perspectives and adapt to new ideas. The scale was designed to provide a comprehensive understanding of the various dimensions of cognitive agility among students.

Validity was ensured that the instrument accurately measures cognitive agility. To establish content validity and face validity, the instrument was undergone rigorous scrutiny through expert reviews, involving specialists in the field who was assessed its relevance and comprehensiveness. Construct validity was rigorously examined using factor analysis, enabling the identification of underlying constructs measured by the instrument.

Reliability was also ensured the instrument's consistency and stability in measuring cognitive agility. Internal consistency, measured through Cronbach's alpha, assessed the interrelatedness of items within the instrument, ensuring they yield consistent responses. To achieve this, the instrument was administered to 60 students who are not part of the main sample. The gathered data was then analyzed.

Table 1: *Reliability Analysis of the Instrument for Cognitive Agility*

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items	No. of Respondents
.791	.786	35	60

Cronbach's alpha value (.791) confirmed a good reliability value of the instrument, reinforcing the instrument's reliability. This rigorous measure was demonstrated that the instrument utilized in this study is reliable, consistently producing stable results when measuring cognitive agility among secondary school students.

Researcher visited the selected districts i.e., Lahore, Kasur and Dera Ghazi Khan physically in order to collect data. Researcher requested headteachers for permission from school to collect data.

Results and Interpretation

After data collection, the data was organized, summarized, and analyzed by using an appropriate statistical analysis technique. In this regard descriptive statistics (frequency, mean, standard deviation) and inferential statistics (independent samples t-test) was used to find the gender-wise difference in the cognitive agility of secondary school students.

Table 2: *Gender of Respondents*

Gender	Frequency	Percentage (%)
Male	971	39.5%
Female	1488	60.5%

N = 2459

Table 2 presents the gender distribution of the respondents. Out of a total of 2,459 respondents, 971 (39.5%) were male, while 1,488 (60.5%) were female. This indicates that the majority of the respondents were female.

Table 3: *Age of Respondents*

Age	Frequency	Percentage (%)
14 Years	1209	49.2%
15 Years	723	29.4%
16 Years	527	21.4%

N = 2459

Table 3 shows the age distribution of respondents. Out of a total of 2,459 participants, 1,209 (49.2%) are 14 years old, 723 (29.4%) are 15 years old, and 527 (21.4%) are 16 years old. The majority of the respondents are 14 years old.

Table 4: *Descriptive Statistics of Percentage of Marks of the Respondents*

Percentage of Marks	Mean	SD
Percentage of Marks of Respondents	80.21	12.00

N = 2459

Table 4 provides the descriptive statistics for the percentage of marks obtained by the respondents. The mean percentage of marks is 80.21, with a standard deviation of 12.00, based on a total sample size of 2,459. This indicates that, on average, respondents scored 80.21%, with some variability in marks as reflected by the standard deviation.

Table 5: *Descriptive Statistics of Cognitive Agility*

Factors of Cognitive Agility	**Mean**	**SD**
Problem-Solving Skills	26.38	5.39
Creativity	26.15	5.70
Learning Speed and Working Memory	26.04	5.52
Decision Making	26.48	5.78
Open-Mindedness	26.32	5.50

N = 2459

Table 5 illustrates the descriptive statistics for various factors of cognitive agility among the respondents. The mean scores for all factors—problem-solving skills, creativity, learning speed and working memory, decision-making, and open-mindedness—are closely clustered around 26, with problem-solving skills and decision-making having slightly higher means (26.38 and 26.48, respectively). The standard deviations range from 5.39 to 5.78, indicating moderate variability in responses across these cognitive agility factors. Overall, the data suggest that respondents exhibit fairly consistent levels of cognitive agility across these different dimensions, with no factor showing significant deviation from the others.

Table 6: *Gender-wise difference in Cognitive Agility*

Gender	***N***	***Mean***	***SD***	***t***	***df***	***Sig.***
Male	970	23.92	.768			
Female	1488	24.49	.635	-9.12	2456	.052

N = 2459

An independent samples t-test was conducted to compare attitudes toward cognitive agility between males and females. The results indicate that there was no significant difference in cognitive agility scores for males (M = 23.92, SD = 0.768) and females (M = 24.49, SD = 0.635); t (2456) = -9.12, p = 0.052. Although the mean score for females was slightly higher, the p-value (0.052) is greater than the 0.05 threshold, suggesting that the difference in cognitive agility between males and females is not statistically significant. The magnitude of the difference in the means was negative, indicating that gender did not have a meaningful impact on cognitive agility of secondary school students.

Major Findings

1. The study assessed the level of cognitive agility among secondary school students aged 14-16 years, revealing an overall moderate level of cognitive agility across various dimensions, including problem-solving skills, creativity, learning speed and working memory, decision-making, and open-mindedness.
2. Out of 2,459 respondents, a majority (60.5%) were female (1,488) compared to 39.5% male (971), indicating a higher representation of female students in the sample.
3. The age distribution of respondents showed that nearly half (49.2%) were 14 years old, with fewer respondents at 15 years (29.4%) and 16 years (21.4%). This suggests that the sample was predominantly composed of younger secondary school students.
4. The average percentage of marks obtained by respondents was 80.21, with a standard deviation of 12.00, indicating that students performed well academically, with some variability in their scores.
5. The mean scores for the various factors of cognitive agility were closely clustered around 26, with problem-solving skills (26.38) and decision-making (26.48) having slightly higher mean scores. This reflects a relatively consistent level of cognitive agility among the students in these areas.
6. An independent samples t-test was conducted to compare cognitive agility scores between male and female students. The results indicated no significant difference in cognitive agility between males (M = 23.92) and females (M = 24.49), with a p-value of 0.052, suggesting that gender did not have a meaningful impact on cognitive agility of secondary school students.

Discussion

The findings of this study provide valuable insights into the cognitive agility of secondary school students aged 14-16 years. Overall, the results indicate a moderate level of cognitive agility across various dimensions, including problem-solving skills, creativity, decision-making, learning speed, and open-mindedness. This is consistent with previous research, which has shown that cognitive agility is crucial for academic success and the ability to adapt to new challenges (Karpinski et al., 2017). The mean scores obtained in this study suggest that students are developing essential cognitive skills that are vital for their educational journey.

Additionally, the lack of statistically significant differences in cognitive agility between male and female students highlights an important aspect of gender equality in education. Although females exhibited a slightly higher mean score, the difference was not substantial enough to warrant different educational approaches based on gender. This finding aligns with previous studies that emphasize the importance of addressing the needs of all students equally, regardless of gender (Cohen & Roper, 2019). It also suggests that both male and female students benefit from similar educational practices and interventions designed to enhance cognitive agility.

The study also emphasizes the need for continuous improvement in educational strategies. Incorporating cognitive skill development into the curriculum and implementing gender-sensitive programs can foster an inclusive learning environment where all students thrive. As cognitive agility is a skill that can be nurtured over time, educators play a critical role in facilitating this development through targeted interventions and support (Higgins et al., 2020).

Conclusion and Recommendations

The conclusion drawn from the study highlights that secondary school students aged 14-16 years exhibit moderate cognitive agility across various domains, including problem-solving, creativity, decision-making, learning speed, and open-mindedness. This moderate level suggests that students possess essential cognitive skills crucial for academic success and personal development, enabling them to navigate complex problems and adapt to new situations effectively. Although females showed a slightly higher mean score in cognitive agility ($M = 24.49$) compared to males ($M = 23.92$), this difference was not statistically significant, as indicated by a p-value of 0.052. This finding implies that educational strategies and interventions can be applied uniformly across genders, reinforcing the notion that fostering cognitive skills is essential for all students regardless of gender. Moreover, the consistent levels of cognitive agility across different dimensions indicate that secondary school students are developing critical cognitive skills, potentially reflecting effective educational practices promoting critical thinking and creativity in their curriculum. While the study provides valuable insights, it also opens avenues for further research, including exploring factors influencing cognitive agility, such as socio-economic background, teaching methods, and extracurricular activities. Additionally, longitudinal studies could assess how cognitive agility evolves as students' progress through their education. In summary, the research underscores the importance of continued support for developing cognitive skills among all students, paving the way for enhanced educational outcomes and personal growth while contributing to a deeper understanding of cognitive agility in the educational context.

Following are the recommendations of this study:

1. Schools may incorporate activities that focus on developing problem-solving, creativity, and decision-making skills into the curriculum to improve cognitive agility among students.
2. Future studies may investigate factors that influence cognitive agility, such as socio-economic background and teaching methods, to better understand how to support students' cognitive development.

References

(Practera. (n.d.). Learning agility. Practera. https://practera.com/learning-agility/

Amin, M., Davis, C. J., Amjad, A. I., Parveen, S., & Naqvi, S. A. A. (2024). Identifying Acoustic Variability Patterns in Spoken English of Fricative Consonants Among Pakistani Native Punjabi Speakers. *Journal of Asian Development Studies*, *13*(3), 1036-1046. https://doi.org/10.62345/jads.2024.13.3.84

Amjad, A. I., Arshad, L., & Saleem, Z. (2024b). Mediational Effect of Students' Creativity on the Relationship between Leadership on Academic Success: Well-Being as Moderator. *Educational Research and Innovation (ERI)*, *4*(1), 1–23. https://doi.org/10.61866/eri.v4i1.60

Amjad, A. I., Aslam, S., & Hamedani, S. S. (2024). Exploring Structural Injustices in School Education: A Study on Intergenerational Repair. In *Frontiers in Education* (Vol. 9, p. 1395069). Frontiers. https://doi.org/10.3389/feduc.2024.1395069

Amjad, A. I., Aslam, S., & Tabassum, U. (2024a). Tech-infused classrooms: A comprehensive study on the interplay of mobile learning, ChatGPT and social media in academic attainment. *European Journal of Education*, e12625. https://doi.org/10.1111/EJED.12625

Amjad, A. I., Aslam, S., Tabassum, U., Sial, Z. A., & Shafqat, F. (2024c). Digital Equity and Accessibility in Higher Education: Reaching the Unreached. *European Journal of Education*, e12795. https://doi.org/10.1111/EJED.12795

Amjad, A. I., Batool, N., & Tabassum, U. (2023c). Modulating inclusive education in early childhood: The role of teachers' attitude and self-efficacy in shaping their awareness and readiness. *Journal of Early Childhood Care and Education*, *7*(2), 55-76. https://doi.org/10.30971/jecce.v7i1.886

Amjad, A. I., Habib, M., Tabbasam, U., Alvi, G. F., Taseer, N. A., & Noreen, I. (2023b). The impact of brain-based learning on students' intrinsic motivation to learn and perform in mathematics: A neuroscientific study in school psychology. *International Electronic Journal of Elementary Education*, *16*(1), 111–122. https://doi.org/10.26822/iejee.2023.318

Amjad, A. I., Ishaque, M. M., & Rafique, M. U. (2023a). Unravelling the psychological underpinnings of classroom dynamics: A study on teacher-student interaction. *Journal of Development and Social Sciences*, *4*(3), 239–250. https://doi.org/10.47205/jdss.2023(4-III)24

Amjad, A. I., Tabassum, U., & Habib, M. (2023). Uncovering teachers' concerns and multi-dimensional attitude towards inclusive education: Who's included and who's excluded. *Journal of Contemporary Trends and Issues in Education, 3*(1), 1-22. https://doi.org/10.55628/jctie.v3i1.71

Cohen, J., & Roper, C. (2019). Gender differences in cognitive skills: A comprehensive study. *Journal of Educational Psychology, 111*(2), 345-360.

Dello-Iacovo, B. (2009). Curriculum reform and 'quality education' in China: An overview. *International journal of educational development, 29*(3), 241-249.

Ezni, R., & Mondam, S. (2015). Comparison of agility training programs for injury prevention in Malaysian school children. *International Research Journal of Medical Sciences, 3*(1), 15-22.

Higgins, S., Katsipataki, M., & Coleman, N. (2020). The impact of teaching and learning strategies on student outcomes: A meta-analysis. *Educational Research Review, 25*, 100-118.

Jian, Z. (2022). Sustainable Engagement and Academic Achievement Under Impact of Academic Self-Efficacy Through Mediation of Learning Agility - Evidence from Music Education Students. *Frontiers in Psychology, 13*(1), 89-97.

Karpinski, A., Goh, A., & Ahn, J. (2017). The role of cognitive agility in academic achievement: Evidence from a longitudinal study. *Educational Psychology, 37*(5), 651-668.

Kashdan, T. B., & Rottenberg, J. (2010). Psychological flexibility as a fundamental aspect of health. *Clinical Psychology Review, 30*(7), 865-878.

Kim, D. Y., Kim, W. H., & Kim, Y. W. (2013). The Development of method for cognitive agility of elementary school student. *Journal of Digital Convergence, 11*(6), 299-309.

Korsten, O. (2022, August 22). Learning agility: What it is and how to assess it. Harver. Retrieved October 10, 2023, from https://harver.com/blog/learning-agility/

Ong, D. J., Aslam, S., & Amjad, A. I. (2024). Interactive Tablets: Catalyzing Engaged Science Learning in English Instruction. *World Journal of English Language, 14*(5), 413-423. https://doi.org/10.5430/wjel.v14n5p413

Qureshi, N. S., Iqbal, M. Z., & Amjad, A. I. (2023). Revitalizing Ancient Tales: Unleashing the Impact of Digital Storytelling on Self-Awareness and Transformation of Aspiring Teachers. *Pakistan Social Sciences Review, 7*(4), 458-471. https://doi.org/10.35484/pssr.2023(7-IV)42

Rudolph, J., Greiff, S., Strobel, A., & Preckel, F. (2018). Understanding the link between need for cognition and complex problem-solving. *Contemporary Educational Psychology, 55*(1), 53-62.

Sethi, R. (2016). Importance of soft skills for professional students. *International Journal of Recent Research Aspects, 1(*1), 113-115.

Smith, L. B., & Sheya, A. (2010). Is cognition enough to explain cognitive development? *Topics in Cognitive Science, 2*(4), 725-735.

Tabassum, U., Qiang, X., Abbas, J., Amjad, A.I., & Al-Sulaiti, K.I. (2024). Students' help-seeking mediates the relationship between happiness and self-strength: a comparative study on Chinese and Pakistani adolescents, *Kybernetes*, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/K-09-2023-1706

Tabbasam, U., Amjad, A. I., Ahmed, T., & Qiang, X. (2023). Comparison of self-strength, seeking help and happiness between Pakistani and Chinese adolescents: a positive psychology inquiry. *International Journal of Mental Health Promotion 25*(3), 389-402. https://doi.org/10.32604/ijmhp.2023.024130

Ward, T. B., Smith, S. M., & Finke, R. A. (1999). Creative cognition. *Handbook of creativity, 18*(1), 212-219.

Williams, J. S., & Nowack, K. M. (2022). Neuroscience hacks to enhance learning agility in leaders. *Consulting Psychology Journal, 74*(3), 291.

Zhanna, M., & Nataliia, V. (2020). Development of engineering students' competencies based on cognitive technologies in conditions of industry. *International Journal of Cognitive Research in Science, Engineering and Education, 8*(5), 93-101.