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Teaching English with the help of spatial intelligence

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Introduction:

Now a days teaching English became one of the professions and people are creating new trends and new technics to teach English and they making teaching English as their career. Spatial intelligence is one of the approaches to teach English. Few of them know about it. Spatial intelligence has been defined as "the ability to generate, retain, retrieve and transform well-structured visual images" (Lohman 1996)

Spatial intelligence is the concept of being able to successfully perceive and derive insight from visual data. This cognitive process is known as an aptitude for understanding visual information in the real and abstract word as well as an innate ability to envision information. People with this spatial ability can usually create effective images that explain concepts and design prototypes that incorporate spatial reasoning.

Importance of spatial intelligence in technology

Spatial intelligence plays a crucial role in technical systems and software that aim to learn position-based information and update its behavior accordingly. Systems with spatial intelligence often have a complex infrastructure and are comprised of micro location and data analytics functionalities.

Software and hardware that incorporate spatial intelligence are more precise than GPS or radio-based solutions, are less expensive than camera-based location systems, do not require lighting components and are able to achieve location with scale down to the millimetre. Due to this, spatial intelligence is a popular choice for integrating into small robots or wearable technology.

Examples of spatial intelligence

A few examples of applications for spatial intelligence include:

- Telecommunications- Can be used by communications providers to perform network planning and design and identify network boundaries.
- Government- Can be used by governmental departments to perform a variety of tasks such as electoral redistricting, urban planning, mapping, address validation and construction site selection.
- Retail- Can be used by retail companies to identify where stores should be opened, conduct market analysis and pinpoint under-performing geographic areas.
- Transportation- Can be used by transportation departments to monitor public transportation routes and plan new developments.

- **1. Use of spatial language in everyday interactions**
- Parents can help children improve spatial intelligence by using more spatial terms in everyday interaction.
- Spatial language is a powerful spatial learning tool. Using spatial terms in everyday life is one of the best spatial awareness activities for kids.
- Babies learn better when the spatial relations are given names[20]. Pre-schoolers whose parents use more spatial words (such as triangle, big, tall or bent) perform better in spatial tests than those whose parents do not use such language[21,22].
- Here are some examples of spatial-terms.

Type of Terms	***Examples***
Shape	square, circle, sphere, triangle, pentagon
Dimensional adjectives	large, small, long, short, big, tiny, tall
Spatial features	Straight, bent, curvy, corner, side, line, corner, pointy, sharp, edge
Spatial relations	inside, outside, under, around, corner, on top of, at the bottom of, in front of, behind, diagonal, across

- But don't just speak at your child to teach spatial terms. Ask your child to repeat the words back to you and explain what they mean. Encourage your child to use those terms, too.
- Kids who can use more spatial terms are found to perform better in spatial recognition tasks. You can help them make the connections between spatial relations and objects around them[23].
- "Is the candy inside or outside of the glass?"
- "Do you think the toy is under or behind the couch?"
- "I see Lily across the street!"

Recognizing spatial intelligence:

Ninety years ago, Stanford psychologist Lewis Terman began an ambitious search for the brightest kids in California, administering IQ tests to several thousands of children across the state. Those scoring above an IQ of 135 (approximately the top 1 percent of scores) were tracked for further study. There were two young boys, Luis Alvarez and William Shockley, who were among the many who took Terman's tests but missed the cut-off score. Despite their exclusion from a study of young "geniuses," both went on to study physics, earn PhDs, and win the Nobel prize.

How could these two minds, both with great potential for scientific innovation, slip under the radar of IQ tests? One explanation is that many items on Terman's Stanford-Binet IQ test, as with many modern assessments, fail to tap into a cognitive ability known as spatial ability. Recent research on cognitive abilities is reinforcing what some psychologists suggested decades ago: spatial ability, also known as spatial visualization, plays a critical role in engineering and scientific disciplines. Yet more verbally-loaded IQ tests, as well as many popular standardized tests used today, do not adequately measure this trait, especially in those who are most gifted with it.

Spatial ability, defined by a capacity for mentally generating, rotating, and transforming visual images, is one of the three specific cognitive abilities most important for developing expertise in learning and work settings. Two of these, quantitative and verbal ability, are quite familiar due to their high visibility in standardized tests like the Scholastic Aptitude Test (SAT). A spatial ability assessment may include items involving mentally rotating an abstract image or reasoning about an illustrated mechanical device function. All three abilities are positively correlated, such that someone with above average quantitative ability also tends to have above average verbal and spatial ability. However, the relative balance of specific abilities can vary greatly between individuals. While those with verbal and quantitative strengths have opportunities to be identified by standardized tests or school performance, someone with particularly strong spatial abilities can go unrecognized through these traditional means.

A recent review, published in the Journal of Educational Psychology, analyzed data from two large longitudinal studies. Duke University's Jonathan Wai worked with two of us (Lubinski and Benbow) and showed how neglecting spatial abilities could have widespread consequences. In both studies, participants' spatial abilities, along with many others, were measured in adolescence. The participants with relatively strong spatial abilities tended to gravitate towards, and excel in, scientific and technical fields such as the physical sciences, engineering, mathematics, and computer science. Surprisingly, this was after accounting for quantitative and verbal abilities, which have long been known to be predictive of educational and occupational outcomes. In a time when educators and policy-makers are under pressure to increase the number students entering these fields, incorporating knowledge of spatial ability into current practices in education and talent searches may be the key to improving such efforts.

The first source of data reviewed by Wai was a massive longitudinal study, Project Talent. While several studies have investigated the role of spatial abilities in tasks involving visual searching or path finding, Wai and colleagues focused on the relationship between spatial abilities and interests. finding that adolescents with strong spatial abilities also show greater interest than most in working with their hands, manipulating and tinkering with tangible things. While building, repairing, and working with inanimate objects might bore some, spatially gifted adolescents reported a preference for such activities. When those same individuals were contacted again in their late 20s, they had pursued and persisted in scientific and technical fields, earning bachelor's, Master's and doctoral degrees in these areas at higher rates than their peers. These findings suggest that the same child who likes to dismantle and reassemble old electronics may be particularly well-suited for doing the same in adulthood with electrons, molecules, or microchips.

While those with verbal and quantitative strengths enjoy more traditional reading, writing, and mathematics classes, there are currently few opportunities in the traditional high school to discover spatial strengths and interests. Instead, students who might benefit from hands-on, technical material must find an outlet on their own time, or just wait until their post-secondary education. And, in the worst case, they may drop out of the educational system altogether.

The second source of data reviewed by Wai came from a large-scale talent search. Talent searches, similar to Terman's project, use psychometric assessments to identify youths with exceptional talents, usually in quantitative or verbal ability, that might not be recognized in a traditional classroom setting. One of the goals of modern talent searches is to provide the additional educational opportunities and experiences needed by these students for optimal development. Adolescents with exceptionally high quantitative ability, for example, can benefit greatly by additional instruction or an accelerated mathematics curriculum that provides them with developmentally appropriate material, such as advanced calculus rather than algebra. When youths identified by talent searches are appropriately accelerated according to their intellectual strengths, they report higher satisfaction with their education as adults.

The talent search data reviewed by Wai was collected from the Study of Mathematically Precocious Youth (SMPY), a talent search initiated at Johns Hopkins University in the early 1970s. SMPY identified intellectually precocious adolescents at or before age 13 based on scores on the quantitative and verbal subtests of the SAT. After identification, many of these same adolescents were administered measures of spatial ability. Although these participants were selected based on their exceptional quantitative and verbal ability, there was wide variability in the spatial abilities within the sample.

These participants have now been followed for over 25 years, and the variability in spatial abilities was found to be predictive of educational and occupational outcomes, even after accounting for verbal and quantitative abilities. Similar to the subjects from Project Talent, the SMPY participants who earned bachelors, Master's, and doctoral degrees in science and engineering fields had especially strong spatial abilities compared to the rest of the sample. The same trend was found among those who had occupations in these fields at age 33.

Due to the neglect of spatial ability in school curricula, traditional standardized assessments, and in national talent searches, those with relative spatial strengths across the entire range of ability constitute an under-served population with potential to bolster to the current scientific and technical workforce. Alvarez and Shockley found their way despite being missed by the Terman search, and each had considerable impact on technology in the last century.

How Visual-Spatial Learners Learn:

People with visual-spatial intelligence learn best when taught using written, modeled, or diagrammed instruction, and visual media. Visually and spatially talented students have a good visual memory for details. They do less well with auditory-sequential teaching methods such as lecture, recitation, drill, and repetition.

In terms of what this may translate to in daily life:

- Children with this style may do better with whole word recognition rather than phonics.
- They may not perform well with spelling and handwriting.
- When learning math, they benefit from using manipulatives and story problems instead of performing equations.
- They are likely to do better at geometry.
- They enjoy puzzles, mazes, maps, and building blocks.

Grade schools have traditionally focused on auditory-sequential learning methods that may not have served visual-spatial learners well.

These children may begin to perform better in higher grades and college, where their gifts at grasping whole concepts and the big picture become more important. These individuals are often thought of as "late-bloomers" because of this.

Students who are strong in the visual-spatial learning style enjoy school activities such as art, drafting, shop, geometry, computer graphics, and computer-assisted design. They often have an excellent visual memory for details in print and in the environment. People with visual-spatial learning styles are good at visual problem-solving and visual estimation.

Method:

1)at first students are divided in to groups and they are allowed to observe some picture.

2) most probably it is a 3D picture after allowing the students to observe the picture they are allowed to discuss among the peers.

3) later they are allowed to write a piece of writing according to their interest they produce a piece of writing.

4) sometimes if it is video the video is not played completely the ending of the video is not played.

5) the ending of the video is left for the imagination of the students.

6) at final students come with a piece of writing.

7) at final teacher corrects the mistakes and tries to enhance the student's spatial intelligence.

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