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If Bangladesh were to count her blessings, they would number three: the Brahmaputra, the Meghna and the mighty Ganges. These great rivers are practically Bangladesh's only natural resources. In a predominately rural country in which agriculture and freshwater fishing are the keys to the economy, the rivers are the people's lifeblood.

But these blessings, allied with the region's summer monsoon climate, are also a curse. Although almost two metres of rain fall on Bangladesh each year, more than two-thirds [1] (1. go in 2. get in 3. arrive in) just four months. For much of the year, the vast delta formed by the three rivers is parched, but in many summers their banks burst, causing massive floods. Lacking proper sanitation and water-storage facilities, Bangladesh is also [2](1. prone to 2. immune to 3. adapted to) epidemics of water-borne disease. Even during floods, the major problem is the availability of safe water.

Climate change will only make matters worse, with shifting patterns of rainfall and rising sea levels threatening to render large tracts of agricultural land [3] (1. infeasible 2. insignificant 3. useless). Add a cruel and recently discovered twist — the poisoning of many millions of people by well water contaminated with arsenic\* — and it's clear that Bangladesh represents a challenging case study for anyone who wants to solve the world's water problems.

"Nowhere is water more dominant in people's lives," says British geographer John Soussan. And nowhere better illustrates the complexity of producing [4](1. visible 2. subjective 3. workable) solutions to water-resource problems. The threats that face Bangladesh's supplies are intimately interconnected: thwart one, [5] (1. and 2. or 3. for) you can create problems downstream — sometimes literally.

\* \* \*

Worse still, the issues are overlaid by fractious regional politics. For decades, Bangladesh has been [6] (1. in harmony with 2. in dispute with 3. in correspondence with) its neighbours — particularly India — over their management of the rivers that drain into Bangladeshi territory. For the country's politicians, water is the defining issue, and the Ganges — known in Bangladesh as the Padma — whose basin is home to some 400 million people, is a perennial bone of contention. Despite some progress in reaching agreement over the river's management, Bangladesh still blames India for [7] (1. holding back 2. taking back 3. giving back) too much water in the dry season, and letting the floodgates open each time the monsoon threatens.

The picture looks bleak, but experts point out that Bangladesh is, in some ways, a victim of its own success. Given the hydrological hand they were dealt, the inhabitants of the Bengal Delta traditionally grew low-yielding but flood-tolerant rice, and fished wetlands and pools that were recharged by annual floods. This could support a modest population at [8](1. flat 2. similar 3. subsistence) levels, but no more. Since the late 1950s, however, aid-donor-backed irrigation schemes, later incorporating groundwater pumping, have opened up vast areas of fertile delta soil to the plough. Now almost all of the land in Bangladesh that is suitable for agriculture is in use. High-yielding rice varieties have boosted productivity hugely, while the development of coastal areas for shrimp farming has also provided further food and revenue.

As a result, the population has quadrupled since 1950. Today, an average of 920 people crowd into each square kilometer of Bangladesh, making it one of the most [9](1. largely 2. densely 3. appropriately) populated countries in the world. Therein lies the problem: population pressure has helped to make droughts more severe and floods potentially more [10](1. devastating 2. demanding 3. enriching). Also, with sanitation still inadequate, the rapid population growth of the past half-century has exacerbated problems with water-borne disease. Environmental scientist Atiq Rahman [11](1. prefers 2. likens 3. ascribes) Bangladesh to a giant toilet flushed just once a year.

By the 1970s, it was clear that something had to be done, and aid agencies — led by the World Bank and UNICEF — [12](1. caught up with 2. hit on 3. got away with) the idea of sinking tube wells into the underground water reservoirs that lie beneath the delta's surface. Local people, [13](1. dependent on 2. fearful

of 3. indifferent to) this subterranean source, initially called it “the Devil’s water.” But when rates of diarrhoeal disease halved, the programme was deemed an unqualified success. By the 1990s, as many as 10 million wells had been sunk, many of them by local companies.

If only things were that simple: the tragedy that has subsequently unfolded reveals in stark terms how “solutions” to water-resource problems can go astray if our knowledge of a region’s hydrology and geology is [14] (1. incomplete 2. sufficient 3. accumulated). It was Dipankar Chakraborti, an epidemiologist, who first raised the alarm. In 1988, on a visit to his Bengali parents’ rural village, Chakraborti noticed that many local people were suffering from skin lesions and cancers that seemed to be [15] (1. independent of 2. causing 3. consistent with) arsenic poisoning. When he tested samples of well water in his laboratory at Jadavpur University in Calcutta, it became clear why: the villagers’ water supply was massively tainted with the metal.

\* \* \*

Over the ensuing five years, Chakraborti and his colleagues at Dhaka Community Hospital showed that the problem extends across large areas of the Bengal Delta on both sides of the India-Bangladesh border. Some wells contain 400 times the World Health Organization (WHO) safe drinking-water standard for arsenic. Current estimates are that 80 million Bangladeshis are [16] (1. at large 2. at odds 3. at risk), with 30 million drinking water containing five times the WHO arsenic limit. “The danger is very, very real,” says Chakraborti.

The arsenic was washed from the sediments of the Himalayas, and is thought to have been accumulating beneath the Bengal Delta for at least 2 million years. The puzzle is why it is now being drawn to the surface in some wells, but not in others. One leading theory is that the arsenic is released from the sediments into groundwater under oxygen-free, reducing conditions. And some researchers suspect that rotting vegetation in the uppermost 30 metres or so of sediment creates just such an environment. That would help to explain why the problem seems worse in shallower wells, and adds to hopes that it may be possible to [17](1. modify 2. identify 3. overcome) and selectively shut down those that are hazardous.

But recent research from a team led by Shafiqul Islam, a Bangladeshi hydrologist, suggests that the pumping of groundwater for irrigation seems to be drawing arsenic into deeper wells. The mechanism remains [18](1. unclear 2. transparent 3. simple), but Islam suspects that deep groundwater is being replaced by surface water that is rich in organic material, which then mobilizes previously insoluble arsenic. Chakraborti has also found that wells that his group tested and marked as safe had become dangerous when surveyed again a few years later.

What's more, drinking water may not be the only hazard: rice crops irrigated with arsenic-contaminated groundwater have now been shown to accumulate the toxic element. Although it's [19] (1. too easy 2. too late 3. too early) to tell whether this poses a serious threat, the finding has sown seeds of doubt about the use of groundwater for irrigation, which is the mainstay of Bangladesh's agriculture.

Research and new technology will be central to [20](1. undermining 2. tackling 3. indicating) the arsenic problem. Surveying and screening wells is a top priority, yet arsenic-testing kits for use in the field are still unreliable. More work is also needed to confirm the conditions under which arsenic is mobilized from the sediments, and at what depths this occurs.

\*Notes: arsenic 砒素 (ひそ)

—Adapted from Tom Clarke, "Delta Blues," *Nature*, Vol. 422, March 2003.

[21] Which of the following agrees with the description of Bangladesh's natural environment in the 1<sup>st</sup> and 2<sup>nd</sup> paragraphs?

1. The three major rivers in Bangladesh are the country's only means for supplying safe, sanitary water throughout the year.
2. The cycle of dry and rainy seasons causes flood and drought, changing the features of the rivers.
3. The combination of the rivers and summer monsoon climate creates a good natural environment for supplying safe water.
4. Bangladesh's abundant rainfall keeps the country green all the year round.

[22] How does the political relationship between Bangladesh and India relate to the problem of obtaining safe water?

1. Bangladesh and India have been working together to construct wells in order to use underground water.
2. Bangladesh and India have somehow managed to solve the problem together.
3. Bangladesh and India have seen some progress in the rivers' management, but serious disputes still remain.
4. After years of serious discussion, each country now respects the other's position with regard to the use of water.

[23] Which of the following best fits the interpretation of the phrase "a victim of its own success" in the 6<sup>th</sup> paragraph?

1. Initial success creates serious problems later.
2. Success and failure are opposite sides of the same coin.
3. One man's meat is another man's poison.
4. Failure is the basis for success.

[24] According to this article, aid-donor-backed irrigation schemes incorporating groundwater pumping

1. benefited only the international donors and local companies providing the pumping equipment.
2. increased the risk of infectious diseases among people in the Bengal Delta.
3. alleviated international tensions concerning the water of the Ganges.
4. made more land suitable for agriculture, accelerating the population explosion.

[25] According to this article, sinking tube wells into underground reservoirs

1. caused the sinking of the ground level.
2. decreased the amount of arable land.
3. increased the damage caused by the annual monsoons.
4. made the name "Devil's Water" unfortunately appropriate.

[26] The statement "the programme was deemed an unqualified success" in the 8<sup>th</sup> paragraph means that

1. the programme was considered a complete success.
2. the programme was considered a partial success.
3. the programme was considered a conditional success.
4. the programme was considered an unjustifiable success.

[27] According to the 9<sup>th</sup> and 10<sup>th</sup> paragraphs, epidemiologist Dipankar Chakraborti asserted that

1. the problem of contaminated water is confined to the areas of the Bengal Delta on one side of the India-Bangladesh border.
2. the increase in skin lesions and cancers in Bengali villages was caused by well water massively contaminated by arsenic.
3. 30 million people drink water that is safe by WHO standards.
4. wells, once proven safe, are unlikely to become unsafe over time.

[28] Which of the following statements is supported by the 10<sup>th</sup> and 11<sup>th</sup> paragraphs?

1. Almost all of the wells in the Bengal Delta do not contain water with arsenic levels above the WHO limit.
2. Deeper wells have a high probability of including a high concentration of arsenic in the water.
3. Shallower wells are more likely to contain an unacceptable concentration of arsenic.
4. The concentration of arsenic in well water is not dependent on factors such as the depth of the well.

[29] What is the implication of Chakraborti's finding mentioned in the 12<sup>th</sup> paragraph?

1. It contradicts previous research findings.
2. It opens up a new interpretation of the behavior of arsenic.
3. It rejects Shafiqul Islam's theory about arsenic.
4. It supports Shafiqul Islam's theory about arsenic.

[30] Which of the following statements best summarizes this article?

1. A solution to the complex problems relating to water management can be found by international collaboration.
2. Global climate change limits people's ability to manage safe water supplies.
3. Scientific, engineering, and political factors all need to be incorporated in order to manage safe water supplies.
4. Arsenic in drinking water is less of a problem than diarrhoea and drought.

II. 次の文章に関して、空所補充問題と読解問題の二つがあります。まず、[31]から[50]の空欄を埋めるのに、文脈的に最も適切な語を 1 から 3 の中から選び、その番号を解答欄(31)から(50)にマークしなさい。次に、内容に関する[51]から[60]の設問には、1 から 4 の選択肢が付されています。そのうち、文章の内容からみて最も適切なものを選び、その番号を解答欄(51)から(60)にマークしなさい。

Ideally, competence and self-confidence will have developed from a child's earliest days through interaction between the child and his environment. The child affects his environment and in turn the environment affects him; this transaction is a perpetual testing ground for a child, and he discovers a more-or-less endless stream of consequences for what he does. From these experiences the child derives some degree of competence in dealing with his world. There are, however, certain periods or stages of development which present critical challenges to the growth of competence.

One of the critical stages occurs at about the age of two years and can be very [31](1. trying 2. satisfying 3. obliging) to a parent, tempting him to resolve the situation in a decisive manner which is not conducive to the growth of competence in the child. Most children go through a stage of experimentation and exploration of feeding, for example, in which the child [32](1. frowns upon 2. insists upon 3. attempts to avoid) doing it himself and brooks no interference or suggestion from parents. Often the child's activity seems inefficient and time-consuming to the parent, who in exasperation finally intervenes or [33](1. takes over 2. holds in 3. gives out), wrests the spoon from the child and shovels the mashed and scattered food in his mouth. Ideally, the parent would allow the child to gain coordination and competency through manipulating his utensils and feeding himself. Similarly, the teacher may later discourage the autonomy strivings of the young child who is fumbling with words, trying to make a circuit with the batteries upside down, or [34] (1. technically 2. also 3. otherwise) engaged in awkward or inefficient behavior, by taking over and doing for the youngster what he wishes and should be allowed to do for himself.

The time of school entrance is another of the critical stages in the growth of competence. Ideally, the home situation will have provided opportunities for the child to deal successfully with his environment. Thus, the child comes to school expecting further opportunities for new explorations and learning experiences.



Erikson points out: "Many a child's development is disrupted when family life may not have prepared him for school life, or when school life may fail to sustain the promises of earlier." It is at this stage of school entrance that the child experiences, often for the first time, the full weight of the world outside his family. The ideal situation will provide an initial confrontation that allows the child opportunities to succeed, thereby strengthening his skills and confirming his status in his own eyes as a worthy and competent individual. The [35] (1. implication 2. danger 3. conflict), as Erikson warns, lies in a sense of inadequacy and inferiority which the child may gain if his initial efforts in school result in consistent failure. It does not take long for the child who is not learning to read to recognize his failure and to develop feelings of inadequacy about his ability, feelings which often [36](1. come from 2. are caused by 3. result in) a failure syndrome. Failure becomes a self-fulfilling prophecy. The child fails, [37] (1. leads 2. to lead 3. leading) him to expect failure which, in turn, produces further failure. Thus, early school experiences are crucial in the determination of competence or incompetence, and the teacher is a prime determinant of the child's sense of accomplishment or defeat.

In the ideal development of competence, the child tests his abilities in a range of areas and, by observing the results of his efforts, acquires an accurate [38](1. figure 2. estimate 3. function) of his capabilities. However, it is often the case that the misguided efforts of adults seriously interfere with growth in competence and cause lasting damage. Adults often create competitive situations for children on the assumption that competition will act as a stimulus or perhaps [39](1. a goad 2. a wheel 3. a mirror) spurring the child on to greater efforts. Competition, if channeled and controlled, may result in behavior which contributes to gaining mastery by inspiring the individual to exert that little extra something that makes a [40](1. usual 2. superior 3. competitive) performance possible. However, competitive situations also can result in the child's acquiring a crippling feeling of inadequacy and despair if he continually loses, especially to his peers. The competition may in reality be unfair; that is, the child may be [41] (1. pitted against 2. counted as 3. cooperative with) a larger, more mature, more popular, or more intelligent peer so that his defeat is almost assured from the beginning. Usually the child will not perceive the competition as unequal or realize that he may have made a good showing, all things considered. He may mutter that "it

isn't fair," but the anger, hurt, and discouragement [42](1. on 2. against 3. at) being a constant loser, always being chosen last, or being in the slow reading group may create attitudes and patterns of behavior that tend to enhance continued failure. Failure in competition thus may discourage a child from additional attempts at mastering the environment. Persistent failure may lead to anxiety and failure-avoidance patterns of effort in which the child simply refuses to try or else selects a task so difficult that no one will expect him to succeed and hence will not condemn him for failing.

A teacher who sets a common standard of performance for the whole class will inevitably contribute to the failure of some children to develop competence. One fact of life that faces the teacher is that children enter school with varying degrees of competencies and proceed to develop at uneven rates, with the result that divergency increases with each [43] (1. preceding 2. passing 3. follow-up) year. A teacher who grades the class on a sliding scale with A's going to the children who complete the most problems correctly or write the most imaginative or sophisticated papers and B's, C's, and D's awarded to the other children [44](1. in 2. for 3. as) their work compares to that of the A children, is setting up a competitive situation that will defeat some children all of the time. A child whose mind is not as agile as that of the best student, or whose personality or approach is different from that which the teacher favors or ranks as most desirable, is doomed to spend six hours a day, week after week, in a failure situation. Interestingly, some of the children who appear as mediocre or even as slow in one setting may show to much greater advantage when placed in a different class or school. Thus, a child who is rated as a C student in an elite private school whose entrance exams have eliminated [45](1. all but 2. some of 3. none of) the brightest children may be rated as a B child or even as an A child in a school with a more normal distribution. A child who does not excel in this group might have been one of the pacesetters of the class [46](1. had 2. only if 3. unless) he just come along one year sooner or later and had lesser or different competition. The child does not change; only the context in which he appears determines whether he is to be an A, B, or C child. Yet this child placed in a context where he is rated as C will think of himself as mediocre, and his further performances will probably reflect his attitude and his [47](1. degraded 2. heightened 3. defended) self-concept.

What of the child who is in fact a slow or below-average learner? This child faces the continual discouragement of always finding himself at the bottom of the academic heap. The child is not developing competency according to the teacher's judgment as [48](1. opposed to 2. reflected in 3. compared with) his grades and feelings about his ability and his motivation to stand on his own feet. The first-grade teacher, in an attempt to save some degree of self-respect for the low-ability child, may have appointed him chief chalkboard-eraser clapper, but such a distinction hardly balances the realization of academic nonachievement and recognition of intellectual incompetency that the child sees in his marks. For this child, school is probably a maintenance situation at best and perhaps [49](1. more of 2. less than 3. nothing against) a treadmill on which his incompetencies and the resultant feelings of defeat increase as he marks time and stays in place.

The process of competence training and growth is delicate and complex. The task of setting adequate performance levels and healthy expectations for individual children is very difficult, and to do so the teacher must come to know each child well enough to encourage him and demand that he do [50](1. more than 2. as well as 3. rather than) he can, without imposing unrealistic expectations. The line between wasting a child's potential through underexpectancy and destroying self-confidence through overexpectancy is a fine distinction indeed, one which can be drawn only by a teacher highly sensitive to the performance and confidence levels of the children in his classroom. Paradoxically, the criterion of ultimate success for the teacher is a child who is competent to direct his own learning with minimal guidance and help from the teacher.

—Adapted from Frank E. Nardine, "The Development of Competence." In G. S. Lesser, ed. *Psychology and Educational Practice*, Scott, Foreman and Company, 1971.

[51] According to this article, which of the following descriptions is true regarding the critical stage of competence growth at the age of two?

1. Many children are adept at acquiring the skills of using utensils properly, and do not need any parental support in feeding.
2. Most children gain competence in feeding themselves through parental help and suggestion when their activity is inefficient.

3. Children go through a natural order of competence growth although the speed of skill development may vary individually.
4. The development of a child's competence can be hindered by the parents' intervention in the child's process of trial and error.

[52] What implication can be drawn from the 2<sup>nd</sup> paragraph of this article in order for the parent and teacher to encourage the child's growth of competence?

1. The parent and teacher should be ready to offer aid when necessary.
2. The parent and teacher should test the child's innate competence.
3. The parent and teacher should bear with the child's effort.
4. The parent and teacher should be compassionate and cooperative.

[53] What does the expression "the promises of earlier" in the 3<sup>rd</sup> paragraph probably refer to?

1. The child's potential for success as expected at school entrance.
2. The child's successful performance during the early stages of schooling.
3. The teacher's periodic estimation of the child's ability.
4. The school's manifesto given at the beginning of the school year.

[54] According to this article, if a child experienced consistent failure in the early stages of school life, he would

1. overcome a challenging situation by strengthening his coping skills.
2. develop a sense of inadequacy, which hinders the growth of competence.
3. regard failure as an opportunity to become a worthy and competent individual.
4. experience the full weight of the harsh world through a series of confrontations.

[55] The expression "a self-fulfilling prophecy" in the 3<sup>rd</sup> paragraph is used in order to illustrate that

1. one has a hidden ability to make a prophecy which will eventually lead to self-actualization.
2. one makes a plausible prophecy about a future event in order to avoid unnecessary confrontation.
3. one can obtain the power of making a valid prediction about the future through a series of failures.

4. one's assessment of a situation can change one's behavior and eventually make the reality match that assessment.

[56] According to this article, what is the main reason that competition can be unfair if practiced in school?

1. Some children are well motivated by competition, but others are not.
2. Some children are placed in a disadvantaged position from the beginning.
3. Some children reinforce a sense of despair by constantly choosing impossible challenges.
4. Some introverted children find it threatening to compete against their peers.

[57] Which of the following statements seems to best capture the nature of the self-concept developed by a constant loser?

1. "I'm OK and you're OK."
2. "I'm not wrong."
3. "I'm not good enough."
4. "I am what I am."

[58] What is one problem with a common standard of performance if used for the whole class?

1. The standard can ignore tremendous individual variations in developing competence.
2. The standard has a coarse scale, which is not fine enough to assess the advanced learner's ability.
3. The standard is an unfair device, with the teacher grading his "favorite" children highly.
4. The standard appears objective, but in fact, is highly subjective as a scale of assessment.

[59] What does the expression "school is probably a maintenance situation" in the 6<sup>th</sup> paragraph mean?

1. In school, any child somehow finds a place for himself.
2. School makes it possible for a child to keep his academic and intellectual level high.

3. School provides a situation in which any child can save some degree of self-respect.

4. A slow child will remain a slow one as long as he stays in school.

[60] What would be the implication the author is trying to suggest in the last paragraph?

1. Often the quality of success is more important than the quantity of success.

2. Overexpectancy is generally better than underexpectancy.

3. A good teacher is a facilitator who helps children become independent learners.

4. Some children need support from the teacher, and others do not.