UNIVERSITY OF TAKSHASHILA: AN ANCIENT SEAT OF LEARNING

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Abstract

Takshashila University was the oldest center for higher learning in ancient India dated back to the time earlier than the Achaemenid occupation. The fame of Taxila rested on its status as a university town which made it an eminent trade center also. The university was a cluster of scattered colleges headed by the renowned professors of time. Panini and Kautilya were most reputed among them who had made significant contributions in their respected fields. The presence of these esteemed teachers raised it to such a prominent position that students from distant areas accessed Takshashila to complete their education. The students like Jivaka who were graduated from Takshashila had excelled and remembered even today for their contributions. The present paper focuses on the contributions of some individuals affiliated with the university, the mode of teaching, the specialized courses taught its rise and decline. An effort is made to highlight the significance of Takshashila University as a seat of higher education and the importance and thirst of knowledge in ancient times.

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Takshashila (modern Taxila), the capital city of ancient Gandhara, is located in the eastern part of Gandhara between river Indus and river Jhelum. It lies 32 kilometers northwest of Rawalpindi on G.T. road, which connects Central Asia with India. Takshashila was the meeting ground of three significant trade routes of ancient times: one from Pataliputra (modern Patna), second from Central Asia through China and Tibet and third from Assyria, Iran and Afghanistan. Takshashila was a district of Gandhara kingdom but sometimes it also enjoyed an independent status, as in the time of Alexander's invasion. (Plate 1).

Takshashila derived its name from *Taksha*, a son of *Bharata*. It is referred in Ramayana in the following words:

The Gandharvas all being slain, Bharata, the son of Kaikeyi entered those two opulent and magnificent cities, and there, Bharata established Taksha in *Takshashila* and Pushkala in Pushkalavata, in the country of the Gandharvas, in the ravishing region of Gandhara. Overflowing with treasure and precious gems, adorned with groves, they seemed to vie with each other in magnificence.²

Takshashila was regarded as "the greatest of all cities between Indus and Hydaspes" by Arrian.³ According to Arrian Takshashila was a prosperous and thickly populated city.⁴ Takshashila is a Sanskrit term and in Pali it was called as Takhasila which means "the rock of Takshaka" or rock of the great Naga King.⁵ Strabo remarked Takshashila as a large city, thickly populated and extremely fertile, governed by good laws.⁶ Pliny described Takshashila as "a famous city situated on a low but level plain, in a district called Amanda".⁷ Plutarch remarked that Takshashila city was "as large as Egypt, with good pasturage and in the highest degree productive of beautiful fruits".⁸ Patanjali, in his Mahabhasya, described it as a town renowned for its commercial activities.⁹

Fa-Hien called *Takshashila* as *Chu-ch'a-shi-lo* which means "cut-off head" in the following words:

Seven days' journey from this to the east brought the travelers to the kingdom of *Takshashila*, which means 'the severed head' in the language of China. Here, when Buddha was a Bodhisattva, he gave away his head to a man; and from this circumstance the kingdom got its name. ¹⁰

Hiuen Tsang mentions the same belief in following words:

This is the spot where Tathagata formerly dwelt when he was practising the discipline of Bodhisattava; he was then the king of a great country and was called *Chen-ta-lo-po-la-*

⁷ Cunningham, 106.

E.J.Rapson, Ancient India: From the Earliest Times to the First Century A.D. (Cambridge: University Press, 1914), 175.

Hari Prasad Shastri (Trans.), The Ramayana of Valmiki, Vol. 3, (London: Shanti Sadan, 1952), Book 7 Uttara Kanda, Chapter 101, 623.

³ Prakash Charan Prasad, Foreign Trade and Commerce in Ancient India, (New Delhi: Abhinav Publications, 1977), 72.

⁴ Alexander Cunningham, The Ancient Geography of India: The Buddhist Period, Vol.1 (London:Trubener & Company, 1871), 105.

John Watson M'Crindle, Ancient India as Described in Classical Literature, (Westminister: Archibald Constable & Co., 1901), 33.

⁶ Prasad, 72.

Silendra Nath Sen, Ancient Indian History and Civilization, (New Delhi: New Age International Pvt. Ltd., 1999), 119.

⁹ Prasad, 73.

Samuel Beal, Travels of Fa Hien and Sung Yun, Buddhist Pilgrims from China to India (440 A.D. and 518 A.D.), (New Delhi: Asian Educational Services, 1869), 32.

po (Chandraprabha); he cut off his head, earnestly seeking the acquirement of Bodhi: and this he did during a thousand successive births, (for the same object and in the same place).¹¹

Hiuen Tsang further remarks that "The land is renowned for its fertility, and produces rich harvests. It is full of streams and fountains. Flowers and fruits are abundant. The climate is agreeably temperate. The people are lively and courageous, and they honour three gems". 12

An Aramaic inscription, dated back to 4th or 5th century B.C.E., discovered from Taxila reports that the city was reputed as a "University town" known for the coaching of various disciplines of arts and sciences.¹³

Takshashila "stood as the main gate to India connecting her with the rest of the world." It also remained a political and administrative unit of Gandhara since ancient times. Takshashila as famous as a trade centre and was considered as a significant seat of learning due to the presence of Takshashila University. It was the oldest and the earliest organized learning center of ancient India which was funded by the rulers of almost all the kingdoms of India. People from remote areas came to get education in the fields of 'philososphy, medicine, languages, archery and military science.' A graduate from Takshashila University was considered as a sign of merit. Will Durant as cited by Kamlesh Kapur states "Students flocked to Takshashila as in the Middle Ages they flocked to Paris; there all the arts and sciences could be studied under eminent professors, and the medical school especially was held in high repute throughout the Oriental world."

Takshashila university was merely a center of learning and not an institution in the "modern sense of the term" since no huge building of pre-Buddhist period has been exposed which could accommodate a large number of students referred in ancient texts.¹⁷ No proper campus, residential units, lecture halls or class rooms existed. However, some large houses at *Sirkap*¹⁸, which acquire space larger than a single family would need to reside, are thought to be used as the university quarters. 19 They may be the residences of the teaching faculty of the Takshashila University, who use to accommodate their students with themselves which obviously needed a larger space than any usual house. ²⁰ It was a seat of learning where higher education was imparted to the students coming from distant places in quest of knowledge and skill. Takshashila university did not possess the characteristics of a modern university, however, when compared with any modern institution it surpasses every single one. Takshashila became the center for advanced studies due to the presence of teachers who were considered as authorities in their respective subjects. The charisma of these intellects made Takshashila, the capital of Gandhara which attracted the students belonging to all ranks of society from far and wide to accomplish the specialized education. 21 Every teacher was an absolute authority on the subject and taught with full freedom and the way he

Samuel Beal, Chinese Accounts of India Translated from the Chinese of Hiuen Tsang, Vol 2, (Calcutta: Nabajiban Press, 1958), 181.

¹² Beal, 179-180.

¹³ John Marshall, A guide to Taxila, (Calcutta: Superintendent Government Printing, 1918), 9.

Prasad, 172.

¹⁵ Ahmed Hassan Dani, The Historic City of Taxila, (Japan: Hinode Printing Co. Ltd., 1986), 5.

¹⁶ Kamlesh Kapur, History of Ancient India (portraits of a nation), New Delhi: Sterling Publishers, 307.

¹⁷ Anant Sadashiv Altekar, Education in Ancient India, Gayan Publishing House, 2009), 250-1.

¹⁸ The second city of Taxila, which was founded by the Indo-Greeks.

¹⁹ Marshall, 72.

²⁰ Ibid.

Radhakumud Mookerjee, Ancient Indian Education: Brahmanical and Buddhist, (New Delhi: Motilal Banarasidass Publication, 1989), 478.

liked.²² He was independent in the selection or rejection of students, designing the course and teaching methodology.²³ The university was represented by a group of schools for higher studies which were maintained by teachers and supported by the donations of the wealthy community. ²⁴ The senior students of university were appointed as Assistant Masters or *pitthiachariya* who assisted the principal teacher or *Disapamokkhacariya* and sometimes also acted as his substitute when he was engaged elsewhere.²⁵ This facilitated the assistant to train himself as a teacher.²⁶

The distinction of Taxila as a university city dates back to the age of *Jatakas*, though it maintained its merit up to the Christian era. ²⁷ It has been a celebrated center for learning in the times of Achaemenid control in 6th century B.C.E.. At this time it was considered as the head quarter of Brahmanical education. The Greeks, at the time of Alexander's invasion, were amazed by the "asceticism and strange doctrines" of the Brahman philosophers when they met them at *Takshashila*. ²⁸ The university enjoyed a prominent position in the period of Asoka. V. A. Smith describes about its significance during the period of Asoka in the following words: "The sons of people of all the upper classes, chiefs, Brahmans, and merchants flocked to Taxila, as to a university town, in order to study the circle of Indian arts and sciences, especially medicine."

The educational activities at *Takshashila* after the Mauryan period were incomprehensible. *Takshashila* was an important Buddhist centre of learning during the days of Kushans who are known for their patronage of Gandhara art and Buddhism. Many renowned scholars were affiliated with this great institution during the Kushan rule which signifies its eminence and patronage of education by the rulers in their period. The fame of university had undoubtedly rose due to the commercial activities which were on its peak during the Kushan period.

Buddha Prakash mentions the significance of this renowned university of ancient India in the following words:

A significant result of the rise of Gandhara was the growth of her capital *Takshashila* as a seat of learning and education and a centre of culture and commerce. The age of Buddha saw the spread of the fame of *Takshashila* throughout the whole *Uttarapatha* (a region situated along the northern route as opposed to the Deccan, south of the Narmada river). Students from Magadha traversed the vast distances of northern India in order to join the schools and colleges of *Takshashila*. We learn from Pali text that Brahman youths, *Khattiya* princes and sons of *setthis* (rich merchants) from *Rajgariha*, *Kasi*, *Kosala* and other places went to *Takshashila* for learning the Vedas and eighteen sciences and arts. Jotipala, son of the purohit(court Brahmin) of the king of Benares, returned from *Takshashila* with great proficiency in archery or military science and was later appointed commander-in-chief of Benares. Likewise, Jivaka, the famous physician of Bimbisara who cured Buddha, learnt the science of medicine under a far-famed teacher at *Takshashila* and on his return was appointed court-physician at Magadha. Another illustrious product of *Takshashila* was the enlightened ruler of *Kosala*, Prasenajit, who is intimately associated with the events of the time of Buddha. Panini

²² D.G. Apte, Universities in Ancient India, (Baroda: Faculty of Education and Psychology, Maharaja Sayajirao University of Baroda, digitalized reprint 2010), 9.

²³ Apte, 9.

²⁴ Dani, 43.

²⁵ G.P. Malalasekera, Dictionary of Pali: Proper Names, (New Delhi: Asian Educational Services, 2003), 983.

²⁶ Mookerjee, 484.

²⁷ Marshall, 72.

F.E.Keay, Indian Education: An Enquiry in to its Origin, Development, and Ideals, (London: OUP, 1918), 49.

²⁹ Vincent A. Smith, The Early History of India, (New Delhi: Atlantic Publishers and Distributors, 1999), 154.

and Kautilya, two masterminds of ancient times, were also brought up in the academic traditions of *Takshashila*. ³⁰

Educational system of India in ancient times was mainly dependant on the Vedic literature, which is thought to be the foundation of India's social and cultural ideals. *Takshashila* University was an institution where the three Vedas. Rigveda, Yajurveda and Samaveda, were taught. Buddhist religious literature was also included in the curriculum. Pali was the language of tuition and it was here that Indian, Greek and Persian cultures blended together and Buddhism transformed in to a liberal faith. The Brahmans and the nobles form India sent their sons to Taxila for education. Due to its accessible location, students from Afghanistan and Central Asia easily came here to study.³¹

The University of *Takshashila* is indisputably the earliest university of South Asia recognized for its advanced studies. The ancient sacred sources mention it frequently as an important seat of learning attracting students from far off places like *Rajagariha*, *Banares*, *Ujjaini* and *Mithila*. It not only had a notable reputation in India but it also attracted intellectuals from all over the world.

It is believed that the diversified political influence, observed at *Takshashila*, would have left some affect over the curriculum and the mode of teaching prevalent at *Takshashila*. For instance, Persian control over the region introduced the Aramaic script all over Gandhara. Kharoashthi was evolved from the Aramaic which replaced the Brahmi script already prevalent in the region.

The Takshashila University attracted students from distant states to get higher education. A student with maximum age limit of sixteen or eighteen was admitted in the university. Jatakas mention the stories of princes who became sixteen years old were sent to Taxila by their royal fathers for advanced studies.³² Besides princes of royal blood, there were some other students who were awarded scholarships by the states to pay their fees. A Brahman boy, Jotipala, from Benares was sent by the ruler to Takshashila for specializing in the skill of archery.³³ Some student accompanied the princes who were sent to Takshashila for the completion of education such as the royal chaplains of Benares and Rajgariha were sent to Takshashila for higher studies with their respective princes. 34 The amount of fees demanded from a student was around one thousand gold coins. Those who were unable to pay the amount carried out physical labor in exchange.³⁵ The students offering labor, as an alternative of fees, received education during night. The students who had paid the teacher could live with his teacher as his eldest son. All students at Takshashila were not residential students. Those who could afford their living used to reside privately like Prince Jhuna of Benares, who lived in a rented accommodation during his stay.³⁶

The admission in *Takshashila* university was not confined only to the students belonging to the elite class. There are evidences that mention sons of kings, nobles, merchants, tailors and even fishermen getting education at *Takshashila* university alongside. Chandala, was the only class, who were not eligible for admission in the university. Two Chandalas, disguised as sons of Brahmans, went to the university and

³⁰ Buddha Prakash, Political and Social Movements in Ancient Punjab (from Vedic Age up to the Modern period), (Lahore: Publishers, 1976), 140-1.

Raj Kumar, Essays on Ancient India, (New Delhi : Discovery Publishing House, 2003), 81.

³² Hartmut Scharfe, Education in Ancient India, (Leiden: Brill, 2002), 142.

³³ Mookeriee 480

³⁴ Ibid.

³⁵ Sharma, Ram Nath, and Rajendra Kumar Sharma, History of Education in India, (New Delhi: Atlantic Publishers, 2000), 55.

³⁶ Sharma, 55.

got education in law were soon banished when their guise was detected at a dinner.³⁷ All the pupils were required to follow a simple life style, eat similar food, wear simple dress and none of them could possess money at all while studying in the university.³⁸ Incompetent students were not given admission to maintain the excellent reputation of the university. Life of the student at the university was very hard and he had to follow numerous strict rules. Qualities like self-discipline, honesty and modesty were prerequisites for obtaining admission in the university.³⁹

Examination system was not established and no degree, certificate or diploma of any kind was awarded after the acomplishment of higher studies to the students. Knowledge was regarded as a true reward using it for any monetary benefit was considered immoral. Since the mode of teaching was analytical and meticulous the examinations were considered as unnecessary. The student was not allowed to advance further unless he thoroughly mastered his preceding levels.

Courses Taaught at Takshashila:

A wide range of courses was offered at *Takshashila*. The courses were both of religious and secular nature. The secular ones mainly comprised of the scientific or technical courses termed as *silpas*. The term used to denote the religious or literary subjets is *vedas*. The sudy of vedas meant the learning of vedas by heart and interpretation and elucidation of the sacred Brahmanical text. *Jatakas* refers that in addition to the Vedic courses, the arts which were taught at *Takshashila* included medicine, surgery, archery and military arts, astronomy, astrology, accountancy, commerce, agriculture, divination, snake charming and majic. Freedom was given to the students to choose the field in which they wish to specialize. The method of instruction varied for different programs of study. Some courses were taught both theoretically and practically. Theoretical knowledge of a subject was followed by its practical implications, both under the direction and supervision of the teacher. While in some disciplines the practical work was left for the student to complete after finishing their sudies at the university.

Medical Education:

Takshashila was prominent for its medical education; the duration of the course was seven years after which the students acquired expertise in the field of medicine and surgery. Complicated surgeries, like those of skulls and stomach were performed here. Every medical student was expected to have command in medicinal botany since they were taught to treat the ill ones by plant and herbs having medicinal efficacy. ⁴⁵ Once the student completed his education was allowed to depart and practice medical and surgical treatment. Snake-bites were treated effectively. A practical training was given to the students in the use of surgical instruments. ⁴⁶

Jivaka, raised by Prince Abhay, son of Bimbisara, stayed at *Takshashila* for a period of seven years, to learn medicine. He received his education from Rishi Aatreya whose contributions in the field of *Ayurvedic* medicine are unrivaled. Aatreya asked him to explain the medicinal value of all the herbs and plants found as far as fifteen miles

³⁷ Mookerjee, 482.

³⁸ Sharma, 50.

³⁹ Apte, 20.

⁴⁰ Sharma, 55

⁴¹ Apte, 10.

⁴² Ibid.

⁴³ Ibid. 11.

⁴⁴ Altekar, 254.

⁴⁵ N. Jayapalan, History of Education in India, (New Delhi: Atlantic Publishers, 2005), 22.

⁴⁶ A.L Bhasham, "The Practice of Medicine in Ancient and Medieval India" in Ancient Medical Systems: a Comparative study Ed. By Charles M. Leslie, (California: University of California Press, 1977), 26.

around Taxila city. After four days Jivaka reported that there was no such plant devoid of any curative properties. After which he was allowed to practice and became an expert physician.⁴⁷

Jivaka, on his return to *Rajgriha*, became a court physician of Bimbisara and practiced in medicine and surgery all over India. ⁴⁸ Jivaka was ordered by Bimbisara to look after Buddha while he suffered from constipation. He served Buddha most attentively and treated him with purgative of powdered lotuses. He is said to have performed various surgeries as well. He mastered in child care and pediatrics. Prasenajit, the king of Kosala, was also educated at *Takshashila*. ⁴⁹

Some sources mention Charaka's affiliation with *Takshashila* as a wandering scholar. He is called as the father of medicine and also regarded as the founder of Ayurveda. He is credited for composing *Charaka-samhita*, the earliest medical treatise in India. Charaka was a contemporary of Kanishka. The concept of digestion, metabolism and immunity was presented by Charaka for the first time. The discovery of surgical instruments from Taxila strengthens the practicing of various surgeries in ancient times. These instruments were made of copper which are now exhibited in Archaeological Museum Taxila. Among them decapitators, probes, spatula and forceps need mention. Decapitators with sharp cutting edge on the inner sides were used in obstetric surgeries. (Plate 2.1 and 2.2). Spatula was used for mixing and spreading ointments. (Plate 2.3). These surgical instruments are found from the sites of Bhirmound and Sirkap and are dated back to the Indo-Greek and Parthian periods.

Besides the surgical instruments, there are many types of equipment such as scale-pans (Plate 2.4), pestles and mortars, medicine jars, condensers, and a strange pottery object with four spouts (probably an inhaler). These articles should have been used to weigh, assemble, stock up or dispense various drugs.

Archery and Military Science:

The institute of military science at *Takshashila* was particularly meant for the training of princes. The average attending strength of students in this institute was around 103 but once it increased to 500.⁵⁰ The military school offered trainings in archery, mountainclimbing and wrestling.

Jotipala, a Brahamana boy, was sent by the king of Banares to *Takshashila* for learning archery. At the completion of his education his teacher awarded him with his own sword and bow and arrow and offered him to take his place as the head teacher of the school of 500 students since he was old and had reched his age of retirement.⁵¹

Witchcraft:

Sanjiva Jataka mentions that the science of witchcraft was one of the subjects that were taught in the *Takshashila* university.⁵² A variety of mysterious spells were taught at the university.

Famous Students of the Takshashila University:

⁴⁷ Tarun Rashtriya, Vocational Education, (New Delhi: A P H Publishing Corporation, 2008), 111.

⁴⁸ Manilal Bose, Social and Cultural History of Ancient India, (New Delhi: Concept Publishing Co., 1998), 60-1.

⁴⁹ Altekar, 252.

⁵⁰ Dani, 43.

⁵¹ Bose, 59.

⁵² Rajaram Narayan Saletore, Indian Witchcraft, (New Delhi: Abhinav Publications, 1981), 8.

Takshashila was famous as a learning center since the times of Achaemenid control. It was during this time when Panini compiled his Sanskrit grammar while teaching at *Takshashila* University. His *Sutras* are comprised of eight volumes and collectively known as *Ashtadhyayi*. Modern works in this subject, i.e. Sanskrit grammer, are all based on the sutras of Panini and they are committed to memory by the students of Sanskrit in India even today.⁵³

Patanjali, the author of Mahabhashya⁵⁴, got his advanced education in Takshashila and later taught at Pataliputra. Chanakya (Vishnugupta), the minister of Chandra Gupta Maurya, also received his higher education in the Takshashila university and later became a teacher of political science here. Chanakya also educated Chandra Gupta Maurya while he was in Takshashila. Chanakya was a king maker who was undisputedly responsible for making Chandra Gupta Maurya an emperor of Magadha. He instructed him to get the control of northwestern India before his march towards Pataliputra but also guided him in the administrative affairs. He was the earliest political scholar who visualized the very first Indian empire by unification of the several states all over India. He was a renowned economist who thought for the prosperity of the people. Jivaka, the renowned physician during the times of Buddha, spent a period of seven years studying under a reputed physician. Pasendi, the king of Kosala and Mahali of Vaisali were also educated at Takshashila. Takshashila University had its library with a vast collection of manuscripts on a variety of subjects such as Hinduism, political science, literature, medicine and philosophy. 55 The classification system employed in the library was devised by Panini. 56

Takshashila university maintained its eminence and continued to flourish for many centuries. Later, with the rise of Buddhism and the Buddhist Order, the teaching activities shifted from the teachers' dwellings to the Buddhist monasteries built nearby. It had the biggest library at that time.

Takshashila University declined with the decline of *Takshashila* itself. The city was destroyed by the Huns in 455 C.E. The decline of university was first reported by Fahien⁵⁷, who visited India in ca. 400 C.E. Fahien did not notice anything of educational importance when he visited Taxila. Toramana, the Hun invader, attacked and destroyed the university. The university was destroyed along with almost all the original ancient transcripts during the invasion. However some Buddhist *bhikshus* managed to escape to China through tunnels with some of the rare manuscripts.⁵⁸

Conclusion:

Takshashila University was the oldest and most renowned institution of higher education not only of ancient South Asia but of world. Takshashila was the centre of intellectual activities in ancient India and various other institutions of the country were also affiliated to it. Its fame rested mainly due to the presence of the eminent professors. Takshashila University gathered in it the best scholars and intellects of ancient times who were believed to be authority over the disciplines they taught and in their respective fields. Medicine was taught and practiced. Surgeries were also performed which is endorsed by the discovery of various surgical instruments from the sites of Bhirmound and Sirkap.

The students, after bearing hardships of travel, reached *Takshashila* to obtain advance education not only from distant parts of India but also from the countries like Babylonia

⁵³ Keay, 43.

⁵⁴ Mahabhashya is the commentary on Ashtadhyayi of Panini.

⁵⁵ Jashu Patel & Krishan Kumar, Libraries and Librarianship in India, (Westport: Green Wood Press, 2001), 3.

 $^{^{56}}$ M.A. Khan, Library Science Education in India, (New Delhi, Sarup & Sons, 1996), 2.

⁵⁷ A Chinese Buddhist pilgrim who visited Buddhist sites in India in the beginning of 5th century C.E.

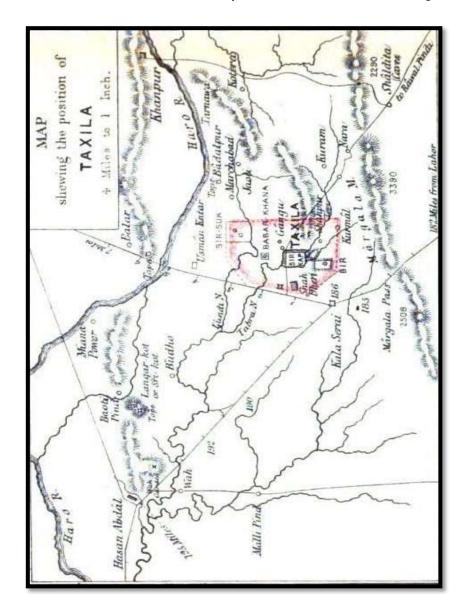
⁵⁸ Kapur, 308.

and China. The kings sent their royal sons far away from palace life to *Takshashila*, with an objective to train them discipline and mannerism which they could learn only after going through the hardships and challenging circumstances while living there for a considerable period. It signifies the importance of education in India even in the ancient times. It was the thirst of knowledge that directed an individual to spend a long time in challenging circumstances in the university far away from his home and loved ones. *Takshashila* played a significant role in creating a cultural harmony in India more specifically in 4th century B.C.E. The company of students from various regions cultivated the sense of respect for their mutual culture which was continuously threatened by the foreign invasions. It was in the ancient *Takshashila* University that the idea of a sovereign state sprouted which was conceived 1900 years later in Europe.

The teacher and the student in *Takshashila* shared a common life and considered education as a joint venture. The teacher was highly respected and revered by the students who were given individual attention and treated like a family member. It was their personal relationship and mutual respect that the teacher was responsible for the moral and physical welfare of his students.

The presence of an educational institution like the *Takshashila* University in ancient South Asia suggest that the inhabitants of the region had a strong desire to acquire knowledge and training of various disciplines. They were eager to groom themselves and were proficient enough to compete with people from other parts of the world. Numerous scholars taught and trained at the *Takshashila* university are remembered for their skillfulness till present.

Plate 1

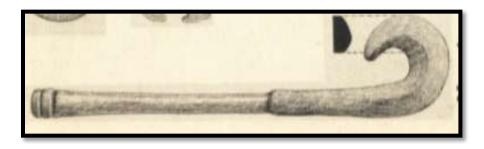


Map of Taxila by Sir Alexander Cunningham in "The Ancient Geography of India: The Buddhist Period" Volume 1, (London: Trubener & Co., 1871) p. 47.

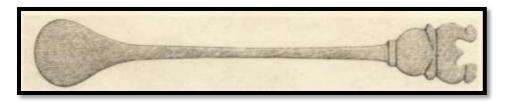
Plate 2



2.1: Copper Decapitator, from Bhirmound, (Marshall, J., Taxila, Plate 177, no. 357)



2.2. Copper Decapitator, from Sirkap, (Marshall, J., Taxila, Plate 177, no. 359).



2.3. Copper Spatula, from Sirkap, (Marshall, J., Taxila, Plate 177, no. 361).



2.4. Hemispherical scale-pan of Copper, from Sirkap, (Marshall, J., Taxila, Plate 177, no. 367).