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Approaches to the quality improvement of TVET teachers in Mongolia: a lost opportunity

Abstract

Mongolia has experienced a remarkable period of heavy investment in skills development related education and training to meet the rapidly growing demand for skilled workers and technicians in the key economic sectors of construction, the extractive industries and civil engineering. The demand has exceeded supply so the government, donors and the private sector have invested an unprecedented volume of time, energy and money to stimulate new regimes of industry-led education and training. This remarkable period of spending on the education-economic development nexus over 2008-2013 began to decline in 2014. Now a more modest period of spending coupled with robust sector planning has commenced. During this period of both rapid growth, and an equally rapid decline, secondary school and post-secondary school teacher training and re-training have been relatively neglected. This is odd, as it is generally understood that the difference between an over performing education sector and an underperforming one, is the quality of teachers, the quality of teacher training and the overall national effort in the quality improvement of teachers and teaching.

1 The situation

In early 2009, Mongolia, still very much a transition country of less than 3 million people, was set to benefit from a major investment in the education sector. Large investments of around \$95 million in technical training and skills development were proposed by key international agencies and donors including the Asian Development Bank (ADB), Millennium Challenge Corporation, European Union and bilateral agencies from Australia, Germany and Switzerland. Coupled with this was private sector spending on the technical and vocational education and training (TVET) sector estimated at nearly \$126 million (Oyu Tolgoi 2011, 2012). This investment was undertaken by key foreign mining investors and those concerned with the mining supply chain including heavy vehicle supply, operation and maintenance, heavy equipment and transportation logistics. The collective investment in TVET was linked to an expected significant escalation in employment in the construction sector, extractive industries and major civil engineering projects in roads and highways.

The scale of the investment in TVET was unprecedented; the largest investment in the education sector in Mongolia's history. Key reforms included a nationwide upgrading of learning environments and curriculum programs and taking account of this, the top-up training of TVET teachers and instructors. Many TVET schools and colleges were targeted for generous spending programs including facility and equipment upgrades and the provision of new power tools and state-of-the-art simulated technologies including e-Learning. However, not all reforms were well informed and before long, it could be seen that the overall reform pro-

cess was losing its way. A key reason was that the preferred TVET personnel professional development strategy failed to respond to agreed approaches for improving vocational teacher education in: (i) strengthening teacher training institutions, (ii) improving instructor training and career management and (iii) consolidating regional cooperation in TVET teacher training (UNESCO 2012). Another reason concerned poor progress in the installation of instruments, agencies, principles, norms and standards central to the operations of any standard TVET system.

TVET reforms and sector development in Mongolia now face serious challenges. The previous short period of massive spending has ended and new investments proposed by donors are modest by comparison. Private sector spending has been seriously curtailed and in some important economic sectors reversed (e.g., the mining supply chain). The government is not in a position to begin financing what donors and the private sector once covered. The need for continuing the quality improvement of TVET teachers remains as strong as ever as Mongolia continues to experience high unemployment rates but chronic skill shortages. To this end, TVET reform in Mongolia provides a very relevant case study on what was not achieved in TVET teacher education and professionalization. It provides strong evidence of an unfinished agenda despite unprecedented spending.

This paper explores the extraordinary series of events that saw a very promising era in TVET sector development come to a premature end. It will examine what must be regarded as a lost opportunity where it had been recognised by the government, donors and the private sector that the national education reform agenda in Mongolia rested on a rapid strengthening and modernizing of the TVET sector. Despite the investment and ambitious attempts at reform, the performance of the sector barely improved. The key reasons are obvious as curiously the following reform strategies were side-lined: the imperative to professionalize TVET teacher training and qualifications; getting the right people to become teachers and/or selecting the best existing TVET teachers to become better teachers and curriculum leaders; developing TVET teachers into effective instructors; and ensuring that the sector was able to deliver the best possible instruction for every student. These are all key to a sustainable TVET system.

2 An historical context

Although Mongolia's history extends back over many millennia, it has only been since the late 1920s that it can be said that it started its slow journey towards an integration into the global economy. When the Soviet Union collapsed, Mongolia's lengthy period as a member of the Union of Soviet Socialist Republics came to an end. From the early 1990s, it sought closer ties with Europe and North America. By the early 2000s, the transition to a full market economy had been achieved when the government agreed to the entry of foreign companies with a mandate to begin re-developing Mongolia's extractive industries and contribute significantly to what would come to be known as the construction and property boom (Kohn 2012; Dettoni 2014; The Economist 2014).

Over much of the 20th Century, formal education was quite straightforward. A national education system of State-owned pre-schools, primary schools and secondary schools enabled

high participation rates in school education in each of Mongolia's six regions. Higher education was concentrated in the capital, Ulaanbaatar, as were numerous government Training Centers for trainees and staff from government line-Ministries.

As Mongolia entered the 21st Century, private sector led involvement in education and training which had emerged in the mid-1990s, began to rapidly expand, particularly in relation to post-secondary school provisions for education and higher education (ADB 2005, 40-44; Steiner-Khamsi & Stolpe 2006, 94-99; World Bank 2010, 1-7, 39-41). International schools and a number of small privately owned colleges and universities spread throughout Ulaanbaatar which was experiencing rapid growth itself owing to large numbers of rural families migrating to its sprawling suburbs and shanty towns known also as *ger* settlements. The government sought to strengthen the national education system through re-organising the organisational structure of school education from a K-10 model to a K-12 model. It was during this period that provisions for TVET were standardised with numerous Grade 9-10 secondary schools specialising in vocational training and technical education coming on stream. National efforts for much improved teacher education were put in place (Choiwoo 2004; ADB 2005; Steiner-Khamsi & Batjargal, 2012).

Understanding the form and function of vocational education and training in Mongolia is a challenge. From the early 1960s until the present, secondary schools consisted of mainstream academic schools in Ulaanbaatar and regional and rural generalist secondary schools that provided both an academic and vocational stream. Graduates from both schools could sit the university entrance examinations. The secondary vocational schools centred on State-owned TVET schools popularly known as Vocational Training and Production Centers (VTPC). They have their roots in the School Act of 1963 when courses in polytechnics were made compulsory in secondary schools (Steiner-Khamsi & Stolpe 2006, 44-49, 85-95). This included practical courses for teaching skills needed to operate equipment and machinery. Students in senior secondary grades were introduced to technical drawing, mechanical engineering and electrical engineering.

Rural VTPCs were formalised in the 1970s as numerous satellite towns and districts (*soums*) were constructed throughout Mongolia's six regions. Most students were boys who expected to work on Mongolia's vast plains as herders, farmers and semi-skilled labor after completing Grade 9 or 10. Some VTPCs delivered instructional programs relevant to local industry and employment. This was the case in Erdenet and Nalaikh where secondary vocational schools ran courses in trades central to open cut mining. But most offered the same suite of vocational courses irrespective of employment demand (Weidman 2012, 37-68; Duggan 2010; Duggan & Myer 2013).

It is owing to this mixed history that TVET in Mongolia continues to be misunderstood. Indeed, although there are a number of key studies seeking to explain the background and situation of Mongolia's TVET schools/colleges (World Bank 2010; Weidman 2012) these focus on the **structure** of schools rather than their **function**. The majority of VTPC teachers were and continue to be trained generalist secondary school teachers (ADB 2014). In 2015, only 7 percent of teachers have five years or more of industry-based experience. The VTPC curric-

ulum program is largely academic in nature and even trade subjects are taught as classroom-based or workshop instructional programs. In fact, a VTPC Grade 11 graduate can sit for university entrance examinations and many successfully do so. There are few provisions for apprenticeship programs or traineeships enabling industry-based or on-site training. A key feature of the VTPCs are large numbers of exit students who leave after completing Grade 9.

The majority of VTPCs and senior secondary schools are State-owned and experience poor funding. In 2010, public spending on TVET was roughly 6% of the total spending on the education sector (World Bank 2010). The student body in Mongolia, as is to be expected, is widely dispersed and nomadic. As a result, the education sector has had to maintain an expensive system of boarding schools. When the cost of heating schools is added there is necessarily a high public expenditure on formal education. Accordingly, the VTPCs have experienced a difficult past. By and large they are small and have enrolments of less than 500, far too small for a standard TVET college or Polytechnic. But they nonetheless provide the most logical sites for competency-based education and training as a bridge between school education and employment (MCC 2009).

Since 2005, the number of privately owned TVET colleges has increased. However, the new colleges have a similar profile to the VTPCs: they are small, have low enrolments and offer a limited range of courses and qualifications. Few have strong links to industry (UNESCO 2005). Industry engagement, where it exists, tends to be *ad hoc*, seasonal and free of any government regulation or control. So, Mongolia represents an interesting case study: a TVET sector that is not populated by schools or colleges that match a typical large TVET institution, and numerous senior secondary vocational schools that would benefit through the professional training of teachers and instructors in the delivery of instructional programs in high-demand trades.

3 Provisions for teacher training

Box 1: Goals for teacher training - Mongolia 2008

In relation to the Standardization of Training and Teacher Certification, the goals are:

Analyze, define and approve agreed national training standards.

Analyze, define and approve agreed teacher standards and certifications.

Ensure that standards and certifications are in alignment with other globally recognized certifications and are based on levels of expertise needed to train students on labor market demand occupations, and

Develop medium and long-term staffing and administrative arrangements to ensure MCC supported interventions are sustained. (MCC 2008)

This statement of intent, prepared for the Millennium Challenge Corporation in 2008, referred specifically to teachers in Mongolia's VTPCs. It is interesting, as there have been plenty of studies on the wide-ranging experience for planning, implementing and evaluating staff

development programs for basic education and TVET as a quality improvement imperative. Such studies sought to deepen understandings of the concept of the professional development of teachers and the ways in which teacher professional development can be supported and enhanced (Bourke 1990; Bell & Day 1991; Houston 1980).

Since 2007, the focus of professional training for teachers has been taken seriously and expanded to include relevant provisions for upgrading the skills and professionalism of TVET teachers and instructors. The trigger point was in Bandung Indonesia in 2008 in the First World Congress on Teacher Education for TVET: Shaping TVET Teacher Education for the Changing World of Work. This led to the Bandung Declaration on TVET Teacher Education. TVET-Teacher Training has become quite pressing given the frequency of changes in industry-driven curriculum development where up-to-date training packages can be superseded in a few years. Throughout Mongolia, there has been a steady expansion of training packages introduced by industry but transferred from other educational systems. Provisions for transnational education have increased but the relevant TVET teacher training has lagged behind.

In Mongolia, teacher training provisions are quite straightforward. Historically, students seeking work as secondary school teachers attended the State Pedagogic Institute (established in 1951) where they graduated as either as specialist or generalist secondary teachers. The university was renamed the Mongolian State University of Education in 2004 and recently this was changed to the Mongolian National University of Education but it continues to graduate generalist secondary school teachers who can specialise in academic streams and in some cases teacher education for vocational education and training (Choiजू 2005). During this period, school education has moved from a Grade 1-5 and Grade 6-10 organizational structure to a Grade 1-6 and Grade 7-12 model. Many teachers staffing the VPTCs are graduates from this university.

Box 2: Profile of TVET teachers

At present, 65% of TVET teachers (1365 teachers) teach vocational and skills subjects while 35% (728 teachers) teach general education subjects that are the part of the complete general education curricula of Mongolia. (Weidman 2012)

Most TVET teachers have been trained as general secondary school teachers because qualifications for teachers in the TVET system have not been clearly specified ... The TVET Law requires teachers to have proper experience in production work and a high vocational degree, these have not yet been defined. (ADB 2014)

Throughout Mongolia there are poor provisions for the ongoing professional training or re-training of teachers (Government of Mongolia 2004). There is nothing in the order of a teacher training system where teacher education and the academic qualifications it generates sit within an agreed teacher competency framework under a government accreditation and certification agency for teachers. Despite numerous sector studies calling for a strengthening of the teacher training curriculum with an allied quality improvement of teacher education,

there has been no real effort to keep teacher training in sync with the heavy investment in the education sector as a whole.

The VTTCs are meant to benefit from professional training through regional methodological centers (RMC). These are located in each of Mongolia's 6-regions including Ulaanbaatar. In addition to the RMCs, the TVET sector supports the National Learning and Resource Center (NLRC) based at the Mongolian-Korean Technical College in Ulaanbaatar. As a result of funding from the Government of the USA, these training centers are fitted out with modern e-Learning training facilities enabling video conferencing, online in-service teacher training, webinars and online professional training. This network of training centers that has been in place since the early 2000s, is still well short of the plan to provide a national platform for e-Learning in support of TVET teacher professional training. Across the TVET sector, there are few opportunities for the upgrading of staff and their qualifications outside of this emerging network (Ministry of Education and Science 2012).

Box 3: The e-learning outlook for TVET teacher training

Within Mongolia, six RMCs are considered by the Ministry of Education and Science as the umbrella or overarching training organizations responsible for teacher training, teacher education curriculum and short-term professional development of TVET staff. Each of the six RMCs is located in a Vocational Training and Production Center and serves a geographical region of Mongolia. The TVET Project has been assigned to build upon this regional TVET network and contribute to the process of national TVET curriculum reform and modernization through the proposed NLRC. As a central unit of expertise, the NLRC has been envisaged to work closely with the RMCs to strengthen this network. (MCA-Mongolia 2011)

There continues to be a need to explore e-Learning opportunities that link the six RMCs to the NLRC and an E-Open School at the Mongolian University of Science and Technology (Duggan & Myer 2013). The NLRC, established in 2013, is predicated on the basis that education and training can be treated as a global village whereby best practice in training can be transferred electronically across rural Mongolia. Accessing webinars through the RMCs is a logical outreach training methodology once the type of training and course is selected, including the definition of instructional time in each training package. *But this intention is elusive and its realisation remains some way off.*

In Mongolia, provisions for a national TVET curriculum are weak or absent and therefore, the opportunity to train or retrain teachers and instructors in modern pedagogy linked to a modern curriculum framework are extremely limited. This is despite the fact that there is a sound platform for specialised re-training as the majority of teachers in VTTCs are trained and qualified secondary school teachers most of whom hold Bachelor degrees, Master degrees and in one privately owned TVET College, Ph.D. level (Ministry of Education and Science 2012).

So despite the proliferation of private sector and donor interest in and support of TVET, many of the necessary innovations in teacher professional development have remained in a nascent state. TVET development has progressed without a clear conceptualisation of what fields

TVET teacher training encompasses and whether current employer demand for TVET is being backed by well-trained TVET teachers and instructors in service.

4 TVET and economic development

The role of TVET in economic development is central to many discussions on the global skills shortage and the ongoing mismatch between training and the needs of industry which witnesses widespread unemployment in a context of chronic skills shortages in important trades. There is a common belief that TVET has the potential to improve national economies by reducing skill gaps and unemployment (ILO 1999; Mouzakitis 2010; Puckett, Davidson & Lee 2012; Aradi & Schwaije 2013; Pavlova 2014). This is interesting as in the early 1990s, key multilateral funders of development cooperation including the World Bank (1991), argued that the cost of TVET was too high compared with returns to the economy. State-owned vocational schools and technical colleges simply could not afford to equip their campuses with the necessary equipment, learning resources, power tools, hand tools and instructional technology central to training provided by private sector firms active in education and training.

Moreover, as industry modernizes so does the need to upgrade training and training regimes. In developed education systems, TVET curriculum programs are regularly upgraded to meet new expectations from industry skills councils and employers. Curriculum products such as training packages are often superseded by new versions within a matter of years. Publically funded TVET struggles to keep pace with this often expensive exercise.

Currently, this view is being re-visited in response to the outlook that TVET is necessary for industrialization in modern economies and indeed the global economy (Schwalje 2013). The concept of a work ready graduate has evolved to a model concerning the need for high quality and competency-based education and training and competency-based learning and skills development to meet wide ranging and often shifting industry and employment demand. Taking account of this, we can return to TVET in Mongolia.

During 2009, and after a long and drawn out process of negotiation, the Government of Mongolia approved the installation of the proposed foreign-owned copper-gold mine in Omnogovi and also new coal mines in the same southern region. By 2013, a joint government/private sector investment in copper mining was in place and the open cut operation was in full production with at one point nearly one billion ton of copper ore ready to be exported to China. Mining production, the growing mining supply chain and copper sales proved to be a major boost to the economy of Mongolia.

The mining supply chain saw many international and Mongolian firms experience higher rates of production and service delivery as most of the largest deposits of copper and coal across Mongolia are located in remote areas where in most cases infrastructure levels are non-existent. Indeed, one new mine was regarded as a copper ‘supermine’ where business proved to be brisk as in 2012 the mine had an operational life outlook of at least 50 years generating

a total output worth some \$200 billion at today's prices. Equipment suppliers, material suppliers and large vehicle and equipment suppliers were experiencing boom growth conditions.

During the 2000s, the relevance of Mongolia's TVET sector came into sharp focus largely as a result of the uncontrolled population and housing growth in Ulaanbaatar. As employment opportunities grew in Ulaanbaatar, the predictable rural-urban drift resulting in the rise of shanty settlements occurred. Accordingly, Ulaanbaatar entered an unexpected period of population growth and allied growing unemployment and skill shortages in critical trade disciplines central to civil engineering, construction and property development, mining and the mining supply trade, and interestingly, food production and food processing. This was in a context of unmet labor demand and wide spread underemployment in the many districts of Ulaanbaatar. The shadow economy and unemployment cast an even longer shadow over Ulaanbaatar's numerous shanty settlements (Amar 2004, 32-41; Weidman 2012, 92-103; Duggan & Myer 2013).

As a result of the gradual spread of *ger* settlements around Ulaanbaatar, development cooperation agencies commenced activity in improving living conditions for poor *ger* populations. This involved some level of vocational training in such areas as waterless toilet systems and the use of cleaner coal for cooking and heating (Tserendash 2012). At the request of the government, major donors including the World Bank and Asian Development Bank began to consider loan programs in support of the education sector including TVET.

The ADB took up this option in 2005 and with the assistance of the Government of Germany, financed a small activity in developing a policy framework for regulating a TVET system separate to school education. New activity was also put in place by World Vision International when in 2007 it supported the development of a Polytechnic in mining trades at Choyr in the province of Sukhbaatar the site of the State-owned coal mine supplying Ulaanbaatar's power sector and which also exported coal to Russia.

Donor activity escalated in 2007 when Mongolia successfully secured funding for TVET through the Government of the USA. A \$50 million investment in TVET schools and colleges was put in place for the 2008-2013 period. Donor activity stimulated renewed interest in the sector by the multilateral development banks and the EU who proposed major projects for 2013 and beyond. It was at this point, TVET as a system was being defined as a sector in its own right not as an education sub-sector.

At this time, the mining supply chain became more heavily involved with TVET principally through major equipment/vehicle suppliers. Award bearing vocational and technical training drawing on international curriculum programs and qualifications began to enter Mongolia's national education system. TVET colleges such as the Mongolian-Korean Technical College became venues for new instructional programs drawing on courses and training from North American firms. With the signing of agreements between the government and numerous private sector mining firms a steady stream of TVET courses from Australia made their way to Ulaanbaatar. Many of these courses in engineering and automotive trades and to also prepare general mine workers were being delivered through overseas training organizations.

Both mining companies and donors provided numerous TVET schools and colleges with new equipment and instructional technologies. Classrooms and workshops were upgraded and in some cases new blocks of classrooms and workshops were added to school campuses. Education for employment programs were introduced by the government for the unemployed as was employment training for school leavers funded by the private sector (through mining firms primarily from Australia and Canada). This promising environment, where private sector providers of credible and award bearing TVET were on the rise and State-owned TVET schools and colleges were being modernized made fertile ground for establishing what type of conditions needed to be in place for a strong education to work transition model.

Progress was being made on updating numerous curriculum programs drawing upon curricula drawn from Australia, Canada, Germany, Italy and the United States. For some State-owned TVET schools and colleges, there was a period of unprecedented modernization with many of them having state-of-the-art instructional technology installed, including interactive heavy vehicle simulators and simulators for carrying out plumbing and electrical tasks.

In a very short period, the struggling VPTCs became the focus of an unprecedented modernization process by means of (i) upgraded learning environments including new workshops; (ii) new curriculum programs backed by new hand tools and power tools; (iii) advanced examples of instructional technology and (iv) the construction of new student dormitories to accommodate an expected sharp rise in enrolments. However, teacher training lagged behind. Beyond *ad hoc* and short-term training inputs little thought was given to the national quality improvement of teachers in service.

This became a moot point when in 2013, the rapid international investment in mining was interrupted. Delays in the approval of new mining operations saw private sector spending slow down. The investment in training was an early casualty. As delays dragged on it resulted in a 43 percent drop in foreign direct investment in Mongolia. The economic uncertainty saw Mongolia's annual GDP growth decline with an overall weakening of the economy (The Economist 2014). *It was at this time that the belief that the rapid expansion of the mining sector required an equally rapidly expanding and strengthened TVET sector came into question in a context where demand for skilled labor from the construction sector was well in excess of supply.*

As the rise of TVET had been quite a rapid process its demise was just as sudden. In what can be described as the rise and fall of a TVET empire, once the economy faltered the TVET reform and development process also slowed and shrunk. By early 2014, TVET was in trouble and in numerous cases, progress in TVET development had stalled. All in less than ten years. This is proving to be a major challenge for any theory that proposes that an effective TVET system is a necessary condition for sustainable economic growth as the following citation suggests:

“Some hardly scrutinized assumptions in the development cooperation debate underlie the current interest in TVET or rather skills development. These include first of all the view that by providing trained employees, economic development can be induced and jobs created. This linear causal relationship has to be scrutinized, however. Basically,

it is to be assumed that vocational training measures only help in producing better employment opportunities if a corresponding economic demand for labor exists. [One author] describes the paradox that vocational training is most effective when unemployment is low in an economy, whereas it increasingly forfeits credibility in the opposite case.” (Langthaler 2013)

For reasons that remain unclear to the author, the new period of TVET investment from 2008 was characterised by program fragmentation. Irrespective of the funding source, investments in curriculum programs (as curriculum products) occurred independently of the upgrading of learning environments and the procurement of training equipment including expensive simulation equipment. The procurement of training equipment failed to include solid opportunities for the professional training and development of teachers and instructors in service.

In short, no real effort was made to develop, approve and maintain an agreed in-service professional training system for the quality improvement of teachers in service. No effort was made to retire existing Mongolian teacher training qualifications to be replaced by a new generation of employment related teacher education initiatives. So, when the foreign investment program faltered, the TVET reform and development process was left half-baked with ample evidence of investment in TVET hardware but little evidence of a sustainable education system underpinned by a robust teacher training regime.

5 Conclusion

When the ADB conducted a major education sector review in 2005, a key finding concerned the fact that in the VTPCs the majority of teachers did not have industry experience, were not trained in a specific trade discipline and were working with curriculum programs that reflected Mongolia’s long historical links with the Soviet Union and Soviet economy. The majority of teachers were graduates from Mongolian universities with many senior staff holding Master level degrees but not trade qualifications. Training equipment and training workshops were outdated, in short supply and in numerous cases dangerous to handle. Many instructional programs involved the use of textbooks and manuals rather than handling tools and equipment. It was recognised that a first but crucial step for improving TVET involved the re-training of teachers in those trades they were responsible for delivering instructional programs and in particular, those trades central to Mongolia’s economy. Subsequent studies by World Bank (2010) and the ADB (2014) have described a similar situation and change imperative.

Despite the investment in TVET since late 2009 little attention has been paid to the TVET teacher education and teacher training curriculum imperative or what is increasingly being referred to as a TVET eco-system. Short-term and *ad hoc* spending on capacity development exercises have not been translated into the logically sequenced development of a teacher training system linked to key universities either within Mongolia or the region. Indeed, the introduction of TVET certificates in training to enable skilled workers and technicians to train in a TVET institution or conduct work based training does not prepare trained and registered

teachers nor qualify certificate holders to teach in any Mongolian or overseas school or university.

Why so little attention has been paid to the systematic quality improvement of generalist secondary school teachers who occupy the VTPC space is worthy of a much larger study than can be provided here. Needless to say, an institutional gap exists in the context where there is a common understanding that teacher training systems development goes hand-in-hand with curriculum reform and development. An opportunity has been missed in Mongolia. For instance, there has been no attempt by international organizations to invest in the quality improvement of the National Mongolian University of Education and no attempt to set up a teacher training institution specifically for the re-training of generalist secondary school teachers as specialist trade teachers.

There is no doubt that TVET reform in Mongolia, at one point heavily demand-driven and based on Government of Mongolia national development goals to substantially increase employment in the areas of skilled labor and technicians, will slow down substantially. The necessity to convert many small VTPCs into specialized trade schools with quality improved and re-trained teachers has been lost. It will be difficult to regain.

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