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Developing the FinTan Innovation Pedagogy Model for Higher Education Institutions

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Introduction

Tanzania is one of the developing countries with a population of 54,199,163 people. About 70% of the population is made up of young people aged 15-35 (National Bureau of Statistics, 2016). However, statistics show that only 27% of these young people are employed (National Bureau of Statistics, 2016). Based on the above-mentioned statistics it can simply be generalized that that majority of young people in Tanzania are unemployed.

This situation is alarming and calls for stakeholder's attention. Since academic institutions such as colleges and universities play a major role in preparing and producing individuals for industrial life, they, therefore, constitute a significant part of the stakeholders concerned. The major question is that, to what extent do Higher Education Institutions (HEI)produce graduates with relevant and sufficient competencies, knowledge and skills to help them become self-independent and capable of employing themselves and creating employment opportunities for others. This question has for a long time remained unanswered.

Various national policies frameworks such Tanzania National Development Agenda, Sustainable Development Goals (SDG); National Development Vision (TDV) 2025-35; The second National Strategy for Growth and Poverty Reduction and the current Five Year Development Plan (FYDP II) 2016-2021 with a theme; "Nurturing Industrialization for Economic Transformation and Human Development" calls for competent and skilled graduates from HEIs all over the country, however, there has been little attention on how to get there particularly on HEIs teaching and learning methods.

Producing competent and skilled graduates require a good curricular with strong teaching and learning pedagogy among other things. One of the proven pedagogy in producing competent and skilled graduates is the Innovation pedagogy. In the context of this paper, Innovation pedagogy is the type of active teaching and learning which allows students to build up skills that enables them to create solutions/ new solutions or add value to their organizations, companies or community they are working with. It is a kind of pedagogy through which, learning and teaching correspond to the needs of the community and their working life. The emphasis is on applying learning and teaching methods creatively in a value-adding way to allow students to take full responsibility in reaching their goals and becoming succesful citizens (Konst and Scheinin, 2018). In addition to knowledge and skills that they acquire in the classroom, they also acquire innovation competencies required in working life environment.

Higher education pedagogy in Tanzania

The history of Higher Education Institutions (HEIs) in Tanzania dates back to the independence era with only one university college, the University of London with only one Faculty, the faculty of Law was established. In late 1970 and 80s, there were only four public universities. In recent years we have witnessed a number of both public and private universities and university colleges. According to TCU (2019), the number of universities and university colleges is 49 as of March 2019. Throughout their existence, these HEIs have made a significant contribution to the development of the country in various areas. However, alongside these achievements, in recent years there have been allegations about competences of the graduates. This has catalyzed HEIs and the regulatory bodies to rethink about the pedagogy used. Various efforts have been in place to contain this situation such as meetings, training, and workshop with a view of changing from traditional to modern active teaching and learning methods, but the demand is still very high especially on innovation pedagogy.

Studies by TUDARCo, (2017) and Surya (2016) show that in most universities, the lecture method dominates all the teaching and learning sessions. It is closely followed by seminar presentations and rarely discussion methods. Other methods like interactive lectures, flipped classrooms and project-based learning are rarely used. This situation is largely attributed to the fact that most of the classes are too large to use interactive approaches, the presence of unsupportive teaching and learning facilities and insufficient knowledge and pedagogical skills on part of instructors.

Although most curricular are flexible such that they can allow instructors to use various methods of teaching and learning, the guidelines provided by TCU are in one way or another limiting factor for them to be innovative as most of the learning hours are dedicated to lecture or class contact hours as indicated in Table 1 below .

Table one indicates the allocation of teaching and learning activities in HEIs in Tanzania. From the table, it is seen that only a few hours are dedicated to practical sessions, a situation that limits student's acquisition of practical skills which might be a factor for the allegations of incompetent graduates.

A study conducted at TUDARCo (2017) on innovation pedagogy practiced at the institution revealed that lecture method, group discussions, seminars, questions and answers approach featured as dominant and prevailing teaching and learning approaches used very often. Findings further showed that the approaches which are rarely used at TUDARCo comprise of practical's, case study and storytelling, simulation, context-based learning, hand-on activities, collaborative learning, and real projects. Additionally, other approaches which were rarely applied include industrial visitations, open online platforms such as the use of MOOC's, and MOODLE's, guest speaker, video games and video shows.

The findings above suggest that most of the teaching and learning processes take place in the classroom where lecturers present their topics and students take notes. This is a common approach not only at TUDARCo but also in other universities and colleges in Tanzania. There are several reasons attributed to the use of these dominant methods. These are, for example, ratio of students per lecturer is usually not appropriate; teaching and learning infrastructure in most

Learning Activity	1 Unit = 3 Credits (30 Learning Hours)	2 Units = 6 Credits (60 Learning Hours)	3 Units = 9 Credits (90 Learning Hours)
Lectures	15 Hours	30 Hours	45 Hours
Independent Study	5 Hours	10 Hours	15 Hours
Seminars/Tutorials	5 Hours	10 Hours	15 Hours
Assignments	3 Hours	5 Hours	8 Hours
Practical Sessions	2 Hours	5 Hours	7 Hours
Total	**30 Hours**	**60 Hours**	**90 Hours**

Table 1. Allocation of Hours to Different Learning Activities (Tanzania Commission for Universities 2014).

of the universities and higher institutions do not provide conducive environment for some of the methods to be used; lecturers do not have adequate skills on applying innovation pedagogy in their teaching and learning as observed by Surya (2016). Most of them are experts in their areas of specialization but they lack pedagogical aspects.

Introducing reverse innovation pedagogy at TUDARCo

For the last decade employers in Tanzania suffered from massive unskilled and incompetent graduates with high-grade certificates which do not necessarily match with their job performance. In most cases, the blame is on HEIs and their pedagogy (Surya 2016). Consequently, there is a rise in unemployed graduates who cannot

either employ themselves or employ others. As earlier noted, this situation raises several questions and one being the type of HEIs curricular and the type of pedagogy used in daily teaching and learning.

In trying to fill this gap, Tumaini University Dar es Salaam College (TUDARCo), as one of the HEIs, in collaboration with Turku University of Applied Science (TUAS) pioneered to introduce an innovation pedagogy model for higher learning institutions in Tanzania. The journey to reverse innovation pedagogy started with a kick-off meeting conducted at TUDARCo followed by two phases of intensive training organized by the TUAS team, conducted at TUAS, Finland as described in chapter one. A lot of pedagogical skills and insights were shared with the TUDARCo team during the training. TUDARCo team was exposed to the Finnish way of learning particularly the business academia mode of teaching and learning. Elements like ice breaks, reading cycles,

training sessions, and problem-based projects were shared. The team was also exposed to evaluation as processes where elements like peer evaluation, individual and coach evaluation were shared. Knowledge about innovation pedagogy elements and how they are used in the teaching and learning process was then shared with students and faculty members at TUDARCo. It was received with mixed feelings just like any innovation. After some formal and informal discussions, the concept and was gradually accepted and some elements like reading cycles, interactive lectures, seminars/training sessions, were slowly adopted. Sahin (2006) puts clear that innovation may have been invented a long time ago, in this case, some elements of innovation pedagogy, but if individuals (TUDARCo faculty members) perceive it as new, then it may "still be an innovation for them". This situation is justifiable as observed by Roger's Diffusion of Innovation (DIO) theory that in any innovation there are innovators who adopt new ideas like technologies, concepts, and behaviors in early stages; early adopters, early majority, late majority, and the laggards. It was also expected that Innovation pedagogy at TUDARCo will follow the same trend.

Being a university that strives to produce a graduate who will not only excel academically but practically shape the future, TUDARCo embraced innovation pedagogy. Penttilä (2016) and Henningsen (2016) argued that Innovation pedagogy is all about finding solutions and implementing them, regardless of whether they are novel solutions to the problem or they add value to the improvement of the solutions used to solve the problem. The emphasis is on solving community problems. For example, business students are learning topics on business proposal write up in class, they should go to the community and find out companies, individuals who require business proposals and they don't know how to do it. They should develop a business proposal for these individuals as part of a class assignment or practical work instead of writing a long essay or a take-home essay on business proposal write up. Similarly, students who are learning a course on the law of contract, instead of writing long essays or take-home assignments about it, should go to the community, find out people who require contracts and construct workable contracts as part of their class assignments. However, for this linkage between HEI and community problems to work out, there is a need for close communication between the two parties. On the

other hand, HEI pedagogy should be flexible enough and competent based to allow students to acquire more knowledge and practical skills, experience and attitude to be able to innovatively address community needs that may arise in any working environment.

In Tanzania and many other developing countries, it is a custom that research problems are usually defined by researchers themselves in HEIs and very rarely by the community even though the needs arise from the community itself. This is probably the reason why most solutions provided by HEIs in Africa do not meet the needs of the community. HEIs through their daily teaching and learning, research and consultancy, should get problems from the community and device workable solutions to solve community problems. In the context of this paper, this is reverse innovation.

Developing a new model

TUDARCo in collaboration with Turku University of Applied Sciences (TUAS) through the IRIS project and in response to the current market demand, TCU and College directive to review all curricular in accordance with the guidelines for University Qualification Framework (UQF), embarked on reviewing its current curricula in the spirit of improving the quality of program and incorporate innovative teaching approach. In fulfilling these obligatory requirements, a new model, the FinTan Innovation Pedagogy Model was developed.

FinTan Innovation Pedagogy Model is a medley of elements adopted from the Finnish and Tanzania innovative teaching and learning approaches. These include interactive lectures, reading cycles, training sessions/seminars, real-life assignments, projects, and independent studies. There is also an academic environment that encompasses teaching and learning environment and on the other side, there is the community/society from which the needs to be solved by HEIs arises.

The model generally advocates active teaching and learning methods. It focuses on innovation pedagogy where HEI, students and the community work together in finding solutions to various challenges

facing the community. In his education for self-reliance, Mwalimu Nyerere (1967) insisted on producing capable, well-skilled graduates who are beneficial to the community. In this case, HEIs are supposed to produce self-reliant individuals who can employ themselves and create employment for others. Similarly, Paulo (1921– 1997) in his education philosophy on education for liberation, wanted people to be freed from all forms of oppression and poverty. He wanted education to be a means of liberating people. These two education philosophies call for active innovation pedagogy form HEIs which will lead to the production of multi-skilled, competent, innovative graduates capable of working effectively and efficiently in any work environment. Unfortunately, most HEIs in Africa and other developing countries are far away from achieving this dream. In trying to fill this gap, TUDARCo developed the FinTan model with practical elements for African and other developing countries. The model consists of two major elements; Academic environment and the community.

Academic environment

Academic environment refers to a range of diverse physical locations, contexts, and cultures through which learning takes place. It ranges from physical resources and facilities like lecture halls, libraries, computer rooms and laboratories to modern technologies used in teaching and learning, skilled human resources, learning culture and the curricular involved. The conducive academic environment promotes the culture of productivity in learning where students become creative, innovative and autonomous in performing their learning tasks (Singh 2014 ; Bellaineh 2017).

For learning to take place there should be a web of social relationships as teachers and students interact whether formally or informally. When teachers treat learners as co-partners in learning, the results are usually good and impressive. Learners will fill that they are part and parcel of the learning process; they will be motivated, more innovative, creative in applying knowledge and skills gained to solve community problems.

Teaching and learning in HEIs in Tanzania are dominated by lecture methods where a teacher becomes the center of learning and students become passive learners who listen and take notes of whatever is being taught. This is called the banking system where teachers are depositors and students are depositories according to Paulo Freire (Surya, 2016). This method kills creativity and student autonomy in learning. To address this problem the FinTan model proposed active learning with interactive lectures. This is a type of teaching method where a lecturer uses more than one method of teaching in a single session. For example one may use a few minutes for a lecture, then students may be grouped and given the assignment to discuss and present what they have discussed. This method is applicable in both large and small lecture-based classes and is designed specifically to suit the environment where lecture method cannot be completely replaced, but rather enhanced and punctuated through creating interactive classroom experience and at the same time maintaining lecture as the primary content delivery mechanism. Techniques such as think-pair-share, demonstration and role-playing can be used to foster active engagement and enhance the value of the lecture method. This type of lecture can also be referred to as a participatory lecture.

Active learning involved several other teaching and learning methods like seminars. This is a learning approach that brings together students through their teams for detailed presentation and discussion of a particular subject or aspect which requires comprehensive coverage more than what interactive lectures can offer. Most of the topics for the seminar come from the lectures and this can either be before, during or after the lecture.

Another aspect of active learning is reading circles. These are conducted to increase the understanding of the theoretical and practical aspects of subjects studied. Students in their teams are allocated topics and articles or books to read in a given period and do the related assigned tasks before the reading circle is done. During reading circle sessions the lesson learned is discussed and shared. Finally, the common idea that summarizes and supports learning is made. Reading cycles are useful in student projects as they go through reading series to familiarize themselves with their project and find practical solutions suitable in

meeting the needs of their project. Topics of the reading circles arise from the project and the community (customer). Giving theoretical background but also techniques and tips on how to create solutions, also giving tips which can be tried out in project work.

Projects, both short term and long term projects which may take up to one year may be practiced by students. These projects aim to allow students to turn their knowledge and theoretical background learned in class into practice by providing solutions to community needs. Students divide themselves into teams of 4 to 8 students, select a project to be done based on what they have learned in class and work on it to provide the needed practical solutions. These projects are supervised and facilitated by one or two coaches/facilitators (Lecturers).

Practical Training; this is done at the end of each academic year for first and second-year students. Generally, students are attached to various companies for eight weeks to work as the employed staff does and are evaluated by their immediate supervisor on daily bases and the university lecturer at least once or twice. In the proposed new pedagogy practical training takes 40% and 60% is covered by the major project done in the particular academic year.

Evaluation is done in two major ways. The first one is Progressive evaluation which is a 360 evaluation process. The whole learning process before and after each assigned task done in teams is evaluated. It is divided into the individual evaluation, peer evaluation, and coach's evaluation. The project is also evaluated as part of continuous assessment. In the whole process of evaluation, the "Motorola approach" is used where each evaluator asks four basic questions;

1. **What was good?**

2. **What have we learned?**

3. **What could have been done differently?**

4. **What to take on board?**

All processes involved in project execution are evaluated. For example how reading cycles, training sessions, laboratory works, and fieldwork were involved. The evaluation also includes assessing the actual products, produced at the end of the project and project reports. Examinations are also part of the end of process evaluation which carries 60% as per Tanzania Commission for Universities regulations.

The community

Universities all over the world are recognized as a source of knowledge, innovations and technology transfer to the community. They are thought to be the think tanks in providing solutions to various social-economic problems facing the community. However, for many decades there has been a gap between industries and the community in many developing countries including Tanzania (Surya 2016; Association of African Universities 2012). Universities have triple roles; teaching, research, and consultancy or community outreach services. The problem is with the third role, community outreach or linkage. It is expected that through teaching and learning and research activities carried out in universities, solutions for various social-economic problems facing the community can be provided. Unfortunately, this is not the case. Universities in Africa are being blamed by not carrying out this third and crucial role effectively (Association of African Universities,2012).

In trying to address the above gap, TUDARCo through the newly introduced model, the FinTan model, used micro-entrepreneurs as a pilot to link what the students are learning in class and community problems. More details are presented in the next chapters of what was done and how it was done.

Piloting the FinTan model

The first pilot phase was conducted from April to June 2018. It involved a single course named Information Sources and Services (LIS 111). The course had 4 credits and 60 learning hours it involved 25 undergraduate students from the Department of Library and Information Studies. The second pilot phase was conducted from October to February 2019. It involved three courses namely Research Methods (LIS 205); Information Services for Africa Development (LIS 203) and Business Information (BIM 209). These three courses had 4 credits and 60 learning hours each with a total number of 60 students. In the active learning part, piloted elements involved interactive lectures, reading cycles, training sessions, projects, and the evaluation phase. In linking innovation pedagogy to solve community problems, micro-entrepreneurs residing close to the university were involved. The Paulig Company which imports raw coffee from Tanzania to Finland was a real-life case study.

Teaching and learning at TUDARCo particularly at the Department of Library and Information Studies has changed. It has changed from one way teaching method with a lecturer/instructor dominating to interactive sessions with a lot of learning activities in a session. Instructors are now using more than one teaching and learning approach in a single class with students as a center of learning. The results of using this method are impressive as witnessed by both lecturers and students.

Lecturers from the faculty of Education and Mass Communication Department have started using innovation pedagogy to solve real-life problems. It also came to our attention that other lecturers too are using some FinTan model elements knowingly or unknowingly. When asked what they have done some faculty members had this to share;

Instructor 1: *"If I have a topic on environmental pollution, I gave my students a small project to integrate what they have learned in class into a real-life situation. I was surprised to see what students can do. They came up with practical solutions to solve environmental pollution along one of the Indian Ocean beaches"*

Instructor 2: *"Through a small project, my students did a wonderful documentary on teaching and learning environment to people with disabilities at the college, he added; the students enjoyed doing it"*

These responses show that it is possible to implement some elements of the innovative pedagogy into teaching and learning activities. Faculty members have also learned that students are capable of organizing themselves and work together with very minimum or without supervision. Another lesson is that when learning becomes student-centered, learning becomes more meaningful and enjoyable. With regard to the current curricular being used at the college one of the instructors had this to say;

"The curriculum is flexible as it allows one to introduce new things in the course outline and re-arrange it based on the needs of the learners"

Generally, TUDARCo curricula are flexible enough to allow lecturers to use various teaching and learning approaches. Lecturers may be able to implement all or some of the innovation pedagogy elements such as reading cycles, training sessions, practical and interactive lectures. However, the challenge is that the TUDARCo teaching and learning environment may not be that supportive to allow the use of some methods. Almost all lecture rooms have fixed chairs and some classes have a big number of students. For example, the Faculty of Law and the Faculty of Business Administration have big classes of about two hundred (200) or more students per class, a situation which makes difficulties in implementing some elements of innovation pedagogy like reading cycles or training sessions. Interactive lectures might be suitable for big classes and evening sessions as attested by one of the lecturers who teach evening classes;

"I now use interactive lectures for evening classes. Students became more active and interactive"

Formal learning
Academic enviroment

STUDENTS
ACADEMICS
PUBLIC SECTOR
PRIVATE SECTOR
NGO

Active learning

» Experiences
» Networks
» Degrees
» Knowledge
» Skills

» Common tools & Best practices
» Collaboration & Partnership
» Innovation & Development
» Co-creation & Co-designing

» Capacity building
» Social cohesion
» Attitudes & Awareness
» Mutual understanding
» Regulation & Accreditation

Results » **Outcome »** **Impact »**

Practical learning
Working life enviroment

Active learning Interface between university and working life: projects, assignments, workshops
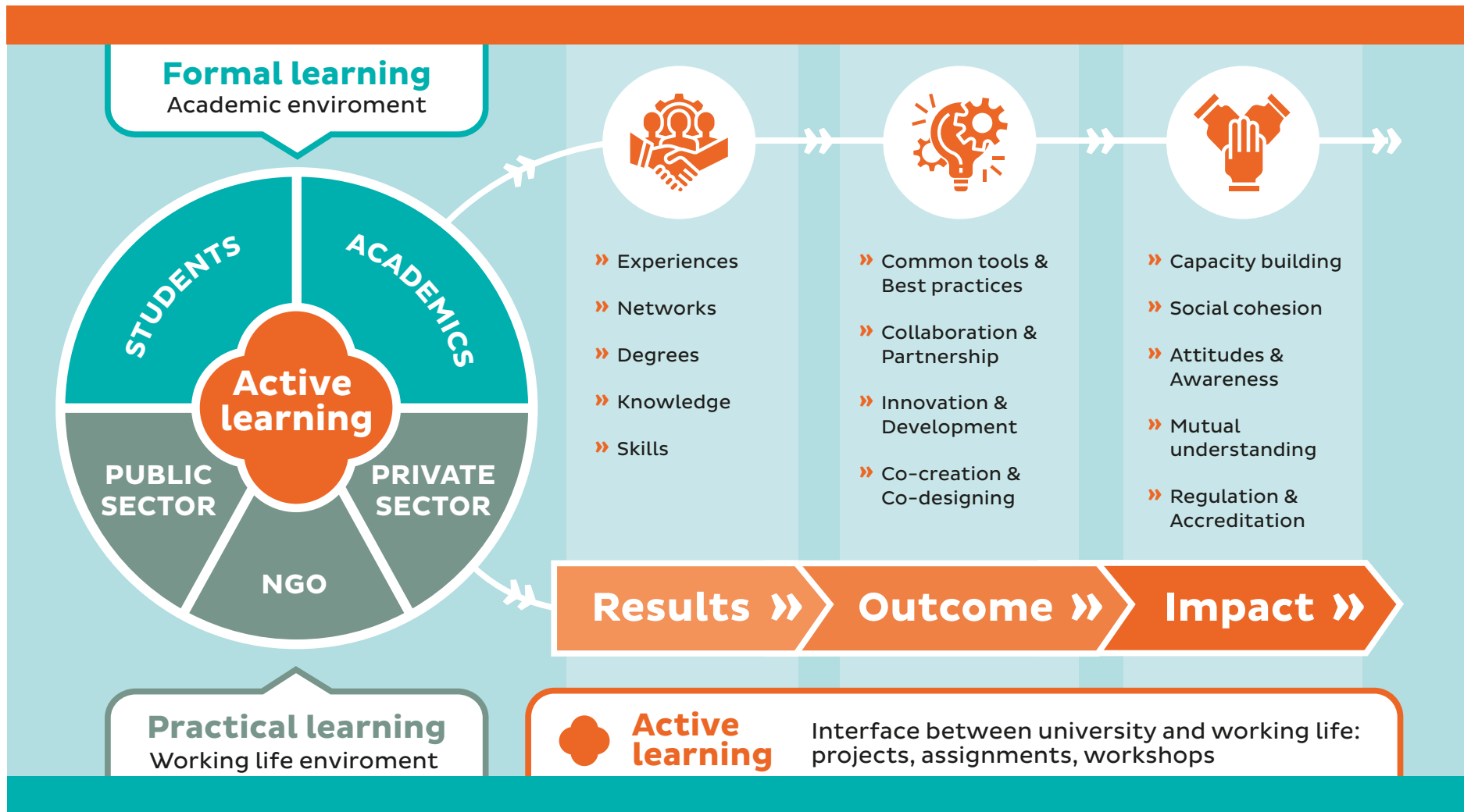
Figure 1. The FinTan Innovation Pedagogy Model.

In the teaching and learning process, lecturers need to be innovative in finding out which approach suits best in their classes. Apart from the fact that the environment and facilities at the university may not support lecturers to be innovative enough in their teaching and learning practices, some of them are not innovative simply because they lack competences and skills on innovative pedagogy. One of the students involved in pilot classes happily said this

> *"I am happy with these new active teaching and learning methods; they have helped me to build self-confidence, enhanced my team working spirit, time management and helped me to be a hard worker"*

Students did their reading circles to enrich their projects. Fourteen teams were doing different projects, each team had various sessions for a reading cycle. Topics were selected by students themselves; this made them be active readers, helped them to search various databases and information sources ranging from informal sources to formal sources. Through reading cycles they were able to learn and uncover a lot of innovative ideas for their projects and their daily social life as attested by one of the students;

> *"Reading cycles helped me to get a lot of information from various sources of information. I have realized that I can do a lot of things just by reading various articles"*

One of the students had this to say about seminar presentations;

> *"Personally seminar presentations made me read a lot to prepare myself. I have also gained confidence and presentations skills"*

Some training sessions took place during pilot phase one and two. Training sessions were student-driven and the topics for training emerged from their projects. Fourteen teams did their projects. The scheduled timetable which occupies two hours per session was not enough. Most of the training sessions were done on Fridays which was reserved for student's project activities and personal studies. Through training sessions, students were able to learn multiple skills such as presentation skills, communication skills, and teamwork. It also helped

students to sharpen their language skills and build confidence to speak to a large audience as attested by one of the students;

> *"Training Sessions has helped me in building self-confidence and speaking in front of people anywhere and at any time"*

Training sessions were followed by an active discussion and feedback. Presenters received feedback from them. This helped the presenters to evaluate their presentation and get more information on how to improve their training sessions. On the other hand, it also helped the students to inculcate a culture of receiving the feedback positively and work on it for further improvement of their work.

Another piloted element was conducting projects. Students divided themselves into teams. Each team comprises of 4 to 8 students and they were assigned coaches to guide them in the course of doing their projects. A total of fourteen independent teams were formed. Each team had a chairperson, secretary, treasurer, and other team members. Based on the piloted courses each team selected a project to work with to solve community problems. Project topics ranged from information service provision and training to ICT based projects. Each team had a meeting schedule where they arrange for reading cycles, training sessions, and project progress meetings. They used files and portfolios to record everything that is done for their project because at the end of the day the whole process involved in doing their project is evaluated and the grades contribute to their final grades.

Students were able to plan and manage their project activities. They learned to supervise themselves and organize their project activities. They learned a crucial role of team working and time management. They had more than five courses running at the same time and they had to work on their projects. They worked very hard to ensure that they effectively and efficiently accomplish both tasks as required. Some of the students had the following to share;

> *"It was not easy, we had a lot of assignments…..but our teamwork has not just ended in class; we are planning to do something big together…"*

Another one said;

> *"I have acquired skills in data collection and analysis. I have also learned that Micro-entrepreneurs need a lot of information and it is our duty as information professionals to address their information needs as much as we can"*

Active teaching and learning methods helped students to gain multiple skills. One of the students had this to say;

> *"I am happy with these new active teaching and learning methods; they have helped me to build self-confidence, enhanced my team working spirit, time management and helped me to be a hard worker"*

One of the projects which were done by students was a research-based assignment provided by a real company based in Finland to research the social-economic benefits of certified and conventional farmers at Mamsera village in Rombo. One team consisting of four students took the assignment. They wrote a proposal, prepared data collection tools, collected data, analyzed it and wrote a report.

Picture 1. Students collecting data at Mamsera village in Rombo (Field data 2019).

Pictures 2 and 3. Students collecting data at Mamsera village in Rombo (Field data 2019).

Evaluation

Evaluation forms the basis of the teaching and learning process. According to the rules and regulations stipulated by the Tanzania Commission for Universities (TCU), all higher learning institutions in Tanzania should examine their students. The examination should consist of continuous assessment (Coursework) and the final examination. Continuous assessment is flexible and differs from one lecturer to another in terms of assignments, tests, and coverage. It carries 40% while the final examination (End of semester written examination) carries 60%. The two pilot phases were not complete without evaluation. Evaluation of the pilot courses consisted of two parts; continuous assessment (Course work) and the final examination. The continuous assessment consisted of 40% which focused on evaluating the whole learning process and the final written examination consisted of a mandatory end of semester written exam which carries 60%.

The continuous assessment covered all piloted innovation pedagogy elements i.e reading cycles, training sessions, projects, and one written test. Among these, it was only the written test which was evaluated by the lecturer/coach alone. Marks distribution tested on aspects like the ability of an individual to work in a team, critical thinking and argumentation, ability to effectively communicate with others, flexibility and commitment in working with others in a team and as an individual. Other aspects considered during the evaluation were the ability to engage others in a class presentation, individual creativity in projects and the end product for a project. Apart from formal evaluation, students had a chance to provide feedback and air out their opinion on innovation pedagogy. One of them had the following views.

> *"The evaluation session was very useful to me, not only in classroom sessions but also in my daily life. I have developed the habit of evaluating myself by asking the big four questions; what is good? What was not good/ what could have been done differently? What lessons have I learned and what to put into practice"*

Through the use of FinTan approach students are actively engaged in the learning process. The engagement of students referred here ranges from simple questions and answers in the classroom to organized problem based learning exercises and simulation to practical experiential learning in the community outside the university environment, popularly known as University – Industrial Linkage (UIL). The target is to make learning both theoretical and practical by putting theoretical aspects learned through lecturers, learning sessions and reading cycle immediately into practice through projects that provide solutions to real-life problems.

Conclusion

In conclusion, the process of developing a new active teaching and learning model for Higher Education Institutions in Tanzania led to several insights to students, teachers and other education stakeholders. Both theoretical and practical training matters related to innovative pedagogy utilizing the synergy of the Finnish and Tanzanian education systems were identified and utilized with the primary focus on improving the connections to working life that is integrated into the curricula.

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