

Individual Institutional Project Report: “A capstone project to enhance entrepreneurial and other critical skills in students of selected AgriSciences Departments”

Dr Albert E Strever, Department of Viticulture and Oenology/SAGWRI, Stellenbosch University

Introduction

This TAU4 fellowship project focused on identifying ways to integrate entrepreneurial and other future-critical skills into a capstone project for the Viticulture and Oenology degree in the Faculty of AgriSciences, Stellenbosch University (SU). Although students were targeted in one department, academics in the faculty were also included in a community of practice to enhance the entrepreneurial content in other departments. Through this intervention, it is believed that students could be better prepared for the volatile, uncertain, complex, and ambiguous (VUCA) environment they will face as graduates. The main activities and deliverables were firstly to scope and develop the capstone project and secondly to host events to create a community of practice in entrepreneurship integration into our curricula. An important principle was to minimise disruption to the current curricula while developing a shared resource base for teaching, learning, and assessment related to entrepreneurship and other relevant competencies.

The issues and factors motivating the project were as follows:

1. Concerns about students' preparedness post-graduation: the faculty is concerned that upon graduation, its students are not adequately equipped with entrepreneurship skills and competencies, allowing them to also venture into this direction should they choose to.
2. Game changer status within the University: The University has identified the enhancement of innovation and entrepreneurship mindsets across the institution as a game changer initiative. This includes a wider adoption of entrepreneurship education within the institution, apart from the obvious focus on it in the business school or economic and management sciences faculty.
3. Recognition of future work requirements: The Institute of Futures Research (IFR) at SU released a report on the future skills needed in agricultural employment (Viljoen et al., 2022), which included systems thinking, technology integration and several “soft skills”. Entrepreneurial competencies overlap with many of the soft skills (or rather professional skills) students can acquire in an entrepreneurial education environment, such as time management, leadership, communication, opportunity recognition that would also be required in the future of employment (Wong and Chan, 2022). Some of the agriculture-related entrepreneurial competencies outlined by Nieuwoudt et al, (2017) such as personal strength, commitment, organising and relationship as well as opportunity competencies also overlap strongly with aspects mentioned the previously mentioned IFR report. Millennials and post-millennials (Gen-Z) value autonomy, innovation, practical experience, collaboration, and social and environmental impact, all of which are core aspects of entrepreneurship education.
4. Insufficient adoption by lecturers in the faculty: Although some departments already offer limited exposure to entrepreneurship and related aspects, academics are not well equipped and supported to incorporate entrepreneurship into their teaching practices, leading to low further adoption.
5. Social justice perspective and cultural diversity: From a social justice perspective, a wider view on entrepreneurship opportunities, including the principles of social entrepreneurship which are very relevant in a South-African context (Krige, 2015), as well as a focus on the diversity of entrepreneurial ventures in agriculture and beyond creates space for students (especially during groupwork) to explore cultural and social diversity opportunities when ideating towards entrepreneurial goals. An example of decolonisation of entrepreneurship and innovation elements is to introduce a (very important) “frugal innovation” context to entrepreneurship education. In my opinion, South Africa is ideally positioned to develop low-cost and for-good innovations, which does not only have to be limited to social entrepreneurship initiatives. It is also important to alert students to the issues around “reverse innovation” where large (often colonial) corporates take frugal ideas and commercialise them successfully in other markets, and the positive and negative aspects linked to this.

Processes and methods

As mentioned before, Stellenbosch University is looking to institutionalise innovation and entrepreneurship into all their activities, including teaching, learning and assessment as a game changer project. Although this will be an increased focus for the next years, this project aimed to accelerate initiatives in the faculty of AgriSciences, in line with rapidly changing employment requirements and industry pressures.

First aim: implementing the capstone project - during the first workshop (June 2022, refer to the next section), the IFR guided 11 senior academics and practitioners from our faculty, including members of our teaching and learning division, to think about the future(s) of our students and academics. The process involved: 1. Defining how we see entrepreneurship within our context, 2. Outlining the implications (positive/negative) for entrepreneurship integration for our students, faculty and industries, 3. "Looking into the future" – if we have firmly established an entrepreneurship mindset amongst students, academics and industries – what it would look like, what happened and what are we commended for?

This led to the idea of a [capstone project](#), which perfectly aligned with the expansion of the current "future of wine" course presented in the final year of the Viticulture and Oenology degree programme. It was scoped with the department in question, and modifications to the curriculum were designed to be submitted to the academic planning committee.

Second aim: creating a community of practice in the faculty – the project facilitated several one-to-one meetings as well as workshops in the faculty, with the aim to contribute to the creation of a community of practice. A "train the trainers" initiative was also initiated in 2023 for other lecturers in the faculty wanting to implement similar initiatives, in collaboration with our Launchlab using Design Thinking principles.

Workshops facilitated and focus group discussions:

- The project lead and Dr Krugel (food science new product development lead) held weekly meetings to discuss the project and its potential interventions, including a meeting with the EMS faculty and interactions with the School of Entrepreneurship, as well as with the Co-Create hub in Stellenbosch to discuss social entrepreneurship opportunities.
- Our faculty, including members of CTL had a scoping workshop with the Institute of Futures Research on 14 June 2022, where 11 Faculty members were present.
- In follow-up an Innovation and Entrepreneurship Community was established, and we held a first session on 2 November 2022, where aspects of this project were raised, and a follow-up was planned for early 2023.
- On 17 February 2023, we hosted a kick-off meeting for this community, also hosting prof. Patrick Shulist, working with our Forestry Department on the Forest 21 entrepreneurship project, as a guest speaker.
- On 11 May 2023 our Division for Learning and Teaching Enhancement hosted a quarterly teaching, learning and assessment seminar where I was the presenter for the session, presenting on the achievements, outcomes and challenges of this project.

The Forest21 interventions by prof Shulist have started the process to develop guidelines, and although this is not funded within the scope of this project, but under the Forest 21 collaboration, there would be no need to duplicate these guidelines – only expand on them and adapt them also to other Departments outside of Forestry.

Achievements

First aim: implementing the capstone project: The project led to successful changes in the curriculum content for the Viticulture and Oenology department, where entrepreneurial skills were previously confined to the final semester of the final year of study. After defining the progression and yearly outcomes of such a project, it was mapped onto the current curriculum of the department and curriculum changes were implemented. The previous approach to entrepreneurship in the course (Figure 1) and adapted capstone (Figure 2) approach are shown below.

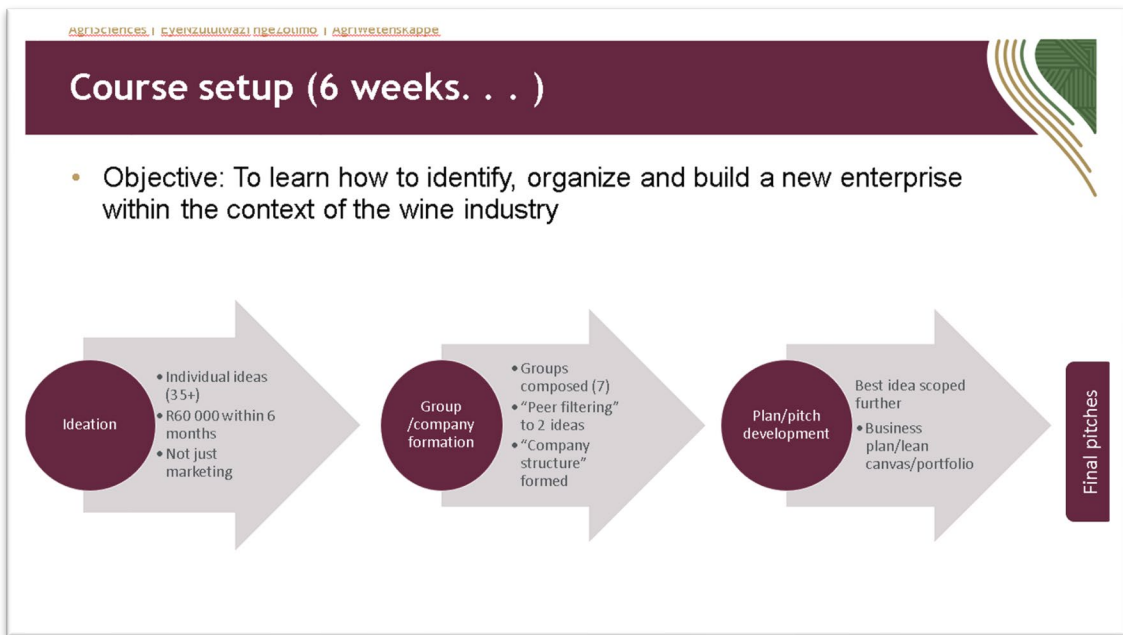


Figure 1 Previous final-year course in the "future of wine" module presented over a 7-8 week period.

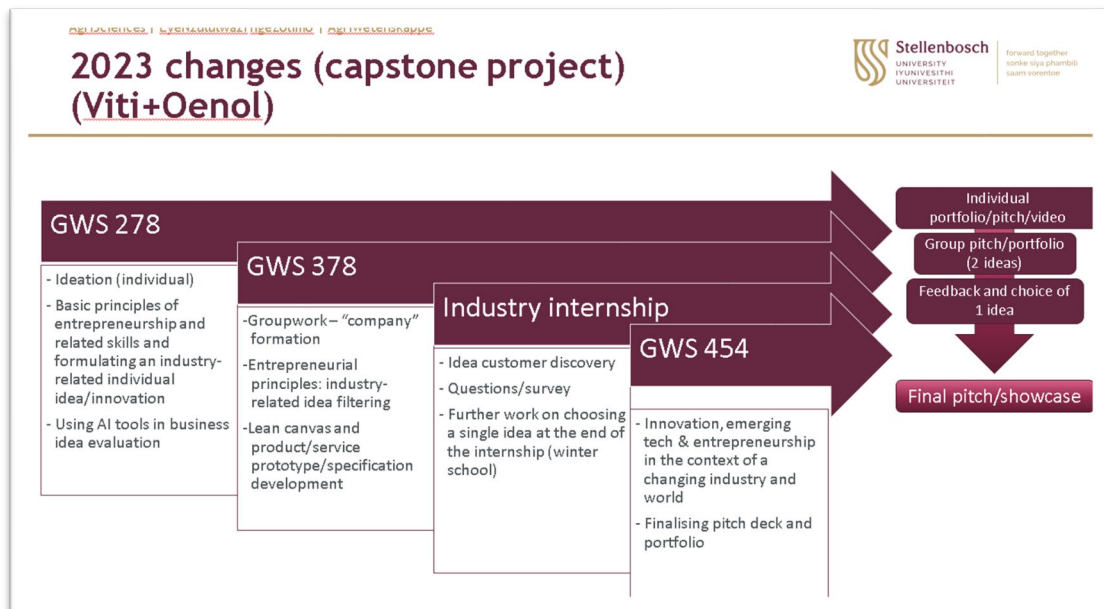


Figure 2 Modified progression of entrepreneurial offering for the Department in the form of a new capstone project approach (outcomes/assessments are shown on the right-hand side)

Second aim: creating a community of practice in the faculty – the project workshops and meetings have contributed to the creation of a community of practice, and the "train the trainers" initiative will lead to enhancing entrepreneurial mindsets of lecturers in some other key departments in the faculty. The institutional presentation of the framework and perspectives on competencies also involved departments in other faculties.

Other benefits/outcomes - Although there is recognition that all students will not become entrepreneurs, the project has also shown that there is much to benefit from any course (also out of the business domain) due to competencies gained from entrepreneurial integration. These competencies, such as teamwork, creative thinking, problem solving and openness to innovative technologies and learning are deemed critical for employment in future and are as applicable to agricultural employment than any other direction (Fitz-Koch et al., 2018). The project also involved interaction with other faculties to learn from their experience and has initiated a community of practice within the AgriSciences faculty to address this need. We have also started

negotiations with the School of Entrepreneurship to so that they can offer dedicated courses to our students and alumni, potentially also staff, but that still must be finalised/contracted.

Challenges and lessons learnt.

Major challenges included:

- Rollout wider than the current “championing departments” – although our Faculty is quite large and diverse, and this is a real challenge, we believe that “organic growth” in smaller steps would be crucial.
- Capacity to implement changes – lecturers and module coordinators as well as administrative staff are under pressure to “do the job of the hour”, and there is some resistance to new initiatives – therefore incremental and smaller organic changes are important.
- Participation in workshops and surveys as well as a general willingness to adopt change – increased pressure on academics, especially coming back to F2F lecturing after CoVID, are possible reasons that participation is still limited to some “familiar faces” in the faculty. One reason for this may also be a limited understanding of the new University Game Changer strategic focus on innovation and entrepreneurship, and generally, a quite complex and fragmented system of innovation and entrepreneurship interventions in faculties.

The major lessons learnt related mostly to the willingness to push for change, being persistent and outlining the benefits of integrating entrepreneurship and agritech into our curriculum, but also to be understanding of the challenges mentioned. Also, although there was a lot of resistance to put elements of entrepreneurship and Agritech directly into the current module offerings – after F2F and personal engagements with Departments it emerged that there “always seem to be some space/opportunity” to either renew or even eliminate what is redundant in the current curricula to make space for these elements, but also to relook our way of implementing changes in future to current modules. To this end, a clearer framework of competencies/skills/acumen is required in Agricultural Sciences, but also a way to continuously scope new and emerging trends and technologies which can be integrated into our current theoretical and scientific base work in modules.

Future perspectives/activities

It was decided to first have internal scoping exercises and alignment, before involving industries and external stakeholders in the process. There were however current Entrepreneurs included in some of the workshops (i.e. Leon Lategan from the School of Entrepreneurship and Jason Samuels from GreenX engineering) as well as some people external to the Faculty (i.e. from the IFR, Launchlab and USB-Ed). The networks in the Forest21 programme in which the faculty participates are also very valuable especially through the shared material produced (videos and slide shows) to assist academics to implement entrepreneurship concepts into their curricula.

It would be crucial to develop new material collaboratively, and also look at complementary material/modules from i.e. EMS, Engineering and the business school, Launchlab, INNOVUS where appropriate. This project aims to set up some base material, but also at the same time exploring complementary avenues to offer material to students – the online space again is crucial in this regard as well as the use of existing material available online, for instance in the MIT open courseware that I have been using in the Future of Wine module.

Concluding remarks

Although my coordination position is positioned to drive an ongoing initiative in the faculty, this project contributed to enhance and intensify efforts in the faculty towards improving the entrepreneurial mindsets of both academics and students. I believe that this intervention has been and will be not only of benefit to the students currently in the departments where this is focused on, with a view on the soft skills acquired and potential of creating different career opportunities, but also through staff/academics involvement enhance the general innovation and entrepreneurship culture in the Faculty. The links created with other faculties or parties external to our faculty are valuable, and in effect creates an ecosystem much needed when entrepreneurship initiatives are integrated in current academic offerings or alongside it.

References

- Fitz-Koch, S., Nordqvist, M., Carter, S., Hunter, E., 2018. Entrepreneurship in the Agricultural Sector: A Literature Review and Future Research Opportunities. *Entrepreneurship Theory and Practice* 42, 129–166. <https://doi.org/10.1177/1042258717732958>
- Krige, K., 2015. Why Social Entrepreneurship in South Africa [WWW Document]. URL <https://www.gibs.co.za:443/news-events/news/pages/why-social-entrepreneurship-in-south-africa.aspx> (accessed 6.10.23).
- Nieuwoudt, S., Henning, J.I., Jordaan, H., 2017. Entrepreneurial competencies and financial performance of farmers in South Africa. *South African Journal of Economic and Management Sciences* 20, 1–13.
- Viljoen et al., 2022. Futures of agricultural employment in South Africa 2035 | Stellenbosch Business School [WWW Document]. URL <https://www.stellenboschbusiness.ac.za/news/2022-03-01-futures-agricultural-employment-south-africa-2035> (accessed 4.19.23).
- Wong, H.Y.H., Chan, C.K.Y., 2022. A systematic review on the learning outcomes in entrepreneurship education within higher education settings. *Assessment & Evaluation in Higher Education* 47, 1213–1230. <https://doi.org/10.1080/02602938.2021.2021583>